ARMY

MARCH 1961 • 60¢

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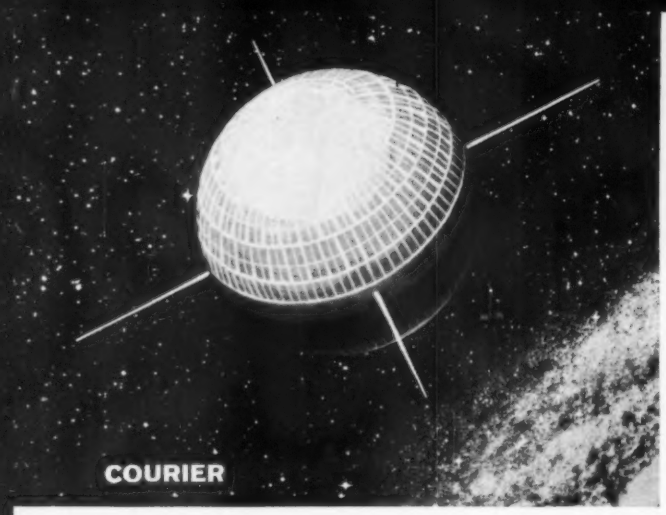

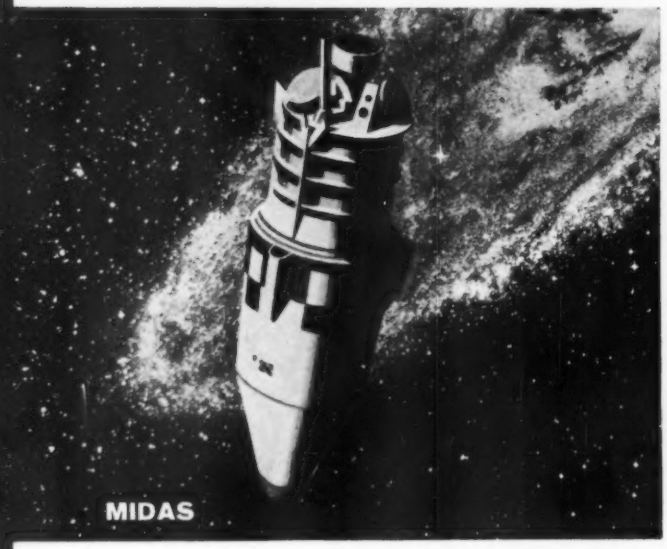

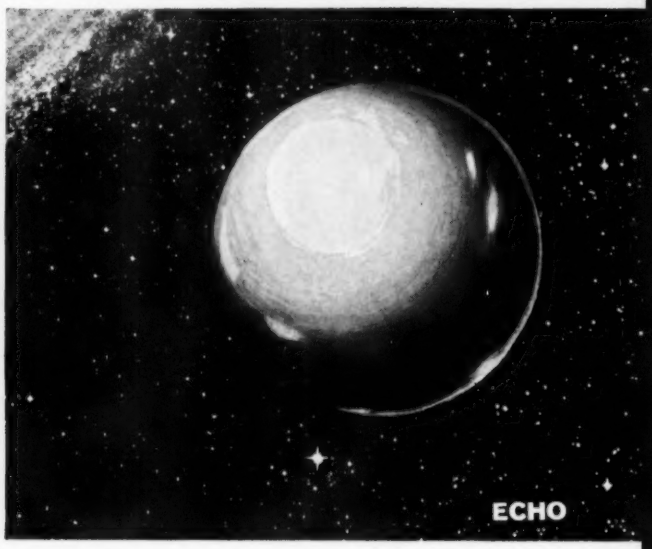

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VOL. 11, NO. 8 **March 1961**

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ARMY

A PROFESSIONAL PUBLICATION DEVOTED TO THE ADVANCEMENT OF THE MILITARY ARTS AND SCIENCES AND REPRESENTING THE INTERESTS OF THE ENTIRE U. S. ARMY

LA GUERRA DE GUERRILLAS. Castro's top field commander—Ernesto (Che) Guevara—tells how the Cuban rebels won **21**

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INERTIAL SURVEYING. How space technology is working for the foot soldier. *H. Clay Johnson, Jr.* **42**

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WE MUST SEE WITH OUR OWN EYES. Caution against pooling of aircraft, pilots and observers in the name of economy. *Maj. Gen. H. W. Blakeley* **62**

RESEARCH, THEN DEVELOPMENT. Costs accumulate and slippages occur when research falls behind development. *Capt. M. J. Herbert* **74**

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COVER

Cuban guerrilla fighter. By *Tom Hickson*

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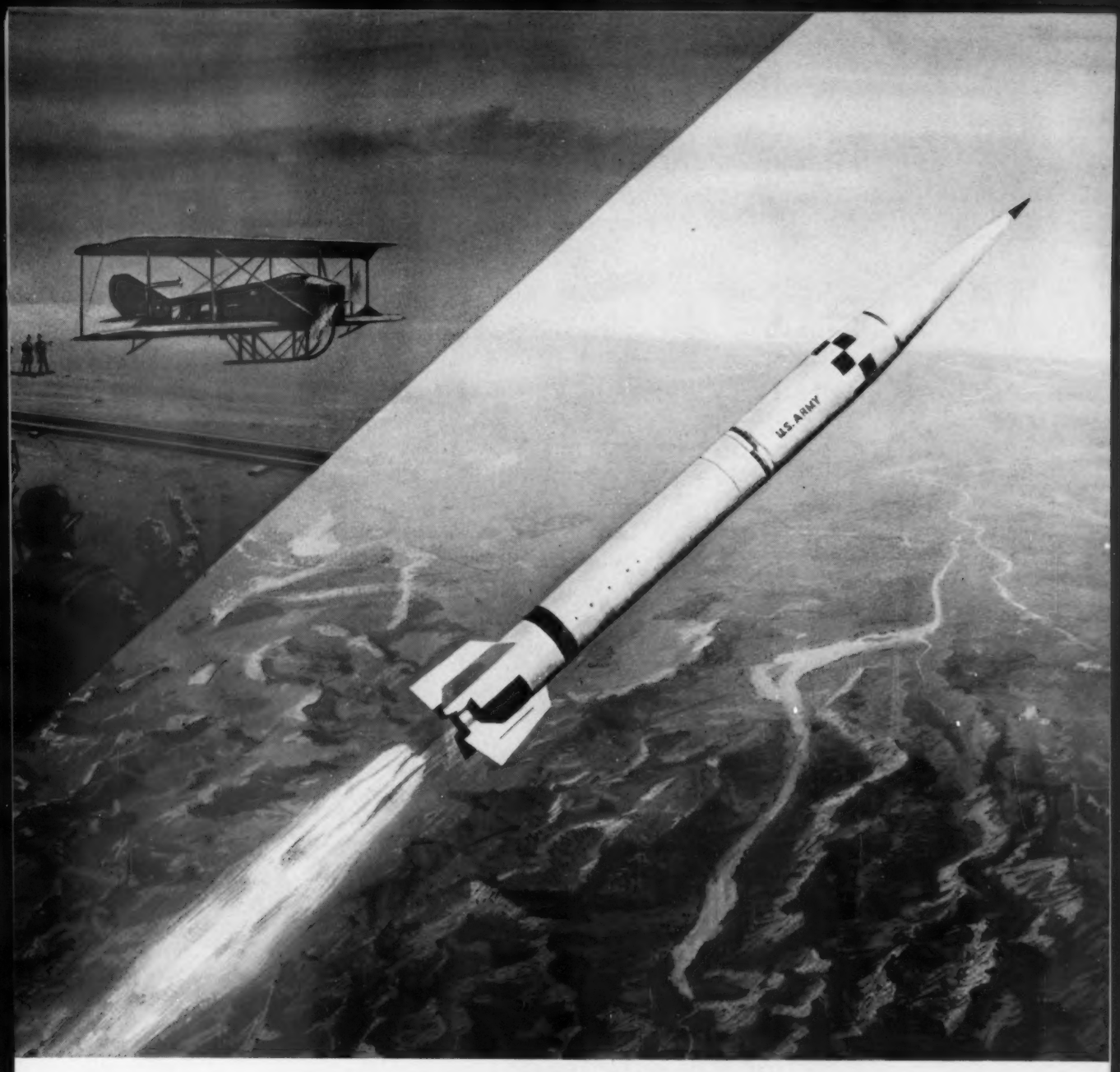

Missilry: 45 years ago, and today

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In systems and components for missiles, too, Sperry has made major contributions. For the Army's Nike Zeus – the nation's only anti-missile missile system now in the advanced development stage for intercepting ICBMs—Sperry developed for Bell Laboratories and Western Electric extended range target tracking and discrimination radar transmitters. Other Sperry radar systems acquire, track and guide the Navy's Terrier and Talos missiles, providing precision fire control for missile cruisers, destroyers and carriers.

Sperry's role in missilry is another example of the Company's integrated capabilities—capabilities that are contributing importantly today in every major theater of our environment. General Offices: Great Neck, N. Y.

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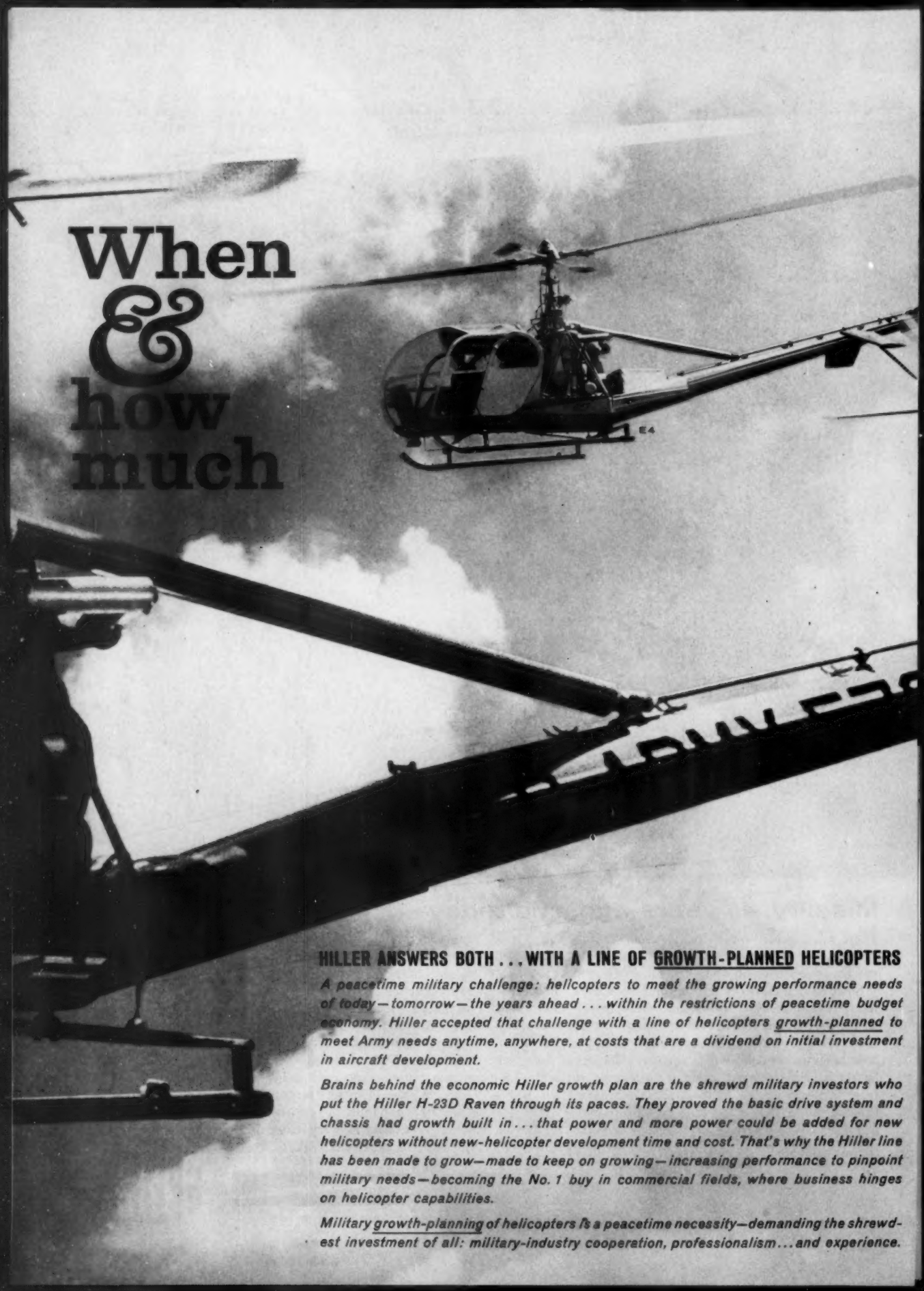

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ARMY letters

IN SUPPORT OF ARMY ROTC

● Orchids to Brig. Gen. Edwin H. Randle for his down-to-earth approach to ROTC training ["It's Plain Basic Training," January].

MAJ. HAROLD A. JENKINS
Orangeburg, S. C.

● To General Randle's letter in the January issue, a fervent *Amen!*

COL. JEAN M. GRAY
Denbigh, Va.

ORCHIDS FOR KLEINMAN, TOO

● I have been reading ARMY and one of its predecessors, *Infantry Journal*, for many years, well over 30. I think that Sergeant Kleinman's article, "Haman Notch" [January], is one of the best you have ever published. It is very good. Sergeant Kleinman is a darned good writer.

LT. GEN. JAMES M. GAVIN
Cambridge, Mass.

FOR 58TH INFANTRY VETERANS

● The 1st Armored Rifle Battalion, 58th Infantry, has been conducting a study of its records to determine if the regiment ever had a nickname. Our battalion would like to adopt one, patterned perhaps after that of the regiment. So far none has been discovered.

This headquarers would very much appreciate hearing from anyone who knows of a nickname of the 58th Infantry Regiment.

MAJ. GEORGE S. EYSTER, JR.
Executive Officer
Fort Benning, Ga.

DEVELOPING COLONELS MAHAN

● My appreciation to Col. Russell O. Fudge for his "Paging Colonel Mahan" in the January issue.

His concluding recommendation for establishing Military Fellowships is well supported and seems entirely feasible within the Army's own means. I would add only that there should be some concrete intermediate steps in the selection process—more than the mandatory "effective writing" programs at our service schools.

The vital thing in the development of such a program is an understanding at all levels that, in addition to encouragement and recognition, the young writer must have time to develop his thoughts and materials. Those who demonstrate promise at an early stage should be given this time, again on Colonel Fudge's condition that they produce. Perhaps at each branch school a select group could be given a one-month continuation to produce a paper of limited scope.

At any rate, I was impressed with the basic thought and presentation of Colonel Fudge's article. When the program begins, I want in on it!

MAJ. ROLFE L. HILLMAN, JR.
Fort Benning, Ga.

● Colonel Fudge's article reveals the importance of soldiers in the role of military theorist. Their ideas are formulated and set down in manuscripts which are the basis of military policies of a government. Military authors who fail to express their ideas in articles do not contribute to military policy-making.

The Military Fellowship idea should be adopted without delay. The services include capable officers who can meet the requirements. If educational institutions encourage faculty members to accept fellowships so that articles may be developed, why can't the Army do likewise? In fact, professors are granted sabbatical leaves to pursue further study.

If we are to prepare now for a future emergency, the Army should award Military Fellowships and grant sabbatical leaves so that its writers can do the required research, study, and writing.

MAJ. THOMAS A. VERRECCHIA
Providence, R. I.

THE REGIMENTAL TRADITION

● The Combat Arms Regimental System and the battle group deal have been with us long enough to get a notion as to their value. In recent issues of ARMY a couple of Cerebrations take exception to the idea. I can't comment on the tactical shortcomings claimed by one author, but Captain Meyer ["Time to Change CARS," December 1960] has something.

After a few more years the various battle groups of a regiment will have won some glories in their own names, but the common tradition will not be helped too much by that fact. In any outfit, its battle groups seldom meet. Their members serve together elsewhere only by the accident of rotation. The 1st and 2d Battle Groups, Any Infantry Regiment, will have less in common than, say, the 725th and 737th Ordnance Battalions. The Ordnance units may have members who have been through the same course of training at the same post; they have the same duty in their divisions; they belong to the same branch. There the similarity ceases. There is no common connection beyond the fact that both are Ordnance Corps field units, organic to divisions. Any tradition they gained came from their membership in specific divisions, which served in different areas, thereby gaining various campaign awards.

Building tradition in a unit depends upon many things, but several are outstanding. Common background, common service, and longevity on the job are most related to tradition. If an outfit is not drawn from a locality, it may draw its tradition from its professional status, such as the Roman legion or the French Foreign Legion.

The British believe the regimental tradition has had its part in keeping the stiff upper lip that way. They can trace many of their outfits back quite a distance. Disbanding units is done with some regard to seniority and tradition. Inactive outfits have their colors laid up and can be revived when needed, some being kept up as a page in the Army List. Lately the British have gone to a permanent brigade system that resembles our vanished regiment, except that it consists of the active battalions of several regiments. Ties with reserve units are maintained by association, without too much loss of face either way. What makes their set-up differ from ours is simple.

They have had a separated battalion set-up for a long time. It looks a lot like our new set-up except that they maintain a training depot unit in their recruiting areas. Recruits get basic training from returned noncommissioned officers of front-line outfits. Fillers go out to the field units filled with regimental spirit. The depot also serves as regimental headquarters, and if the outfit has been at it very long, serves as a depository for their old flags and souvenirs of the wars.

LETTERS

What our system lacks is the central tie provided by the depot of British units. We picked up the words, but not the music. It might not be possible to have depots for all the regiments we have. Our system puts out a more standardized product, but the British get results from theirs. What could we do?

I feel that regional organization has advantages which offset its drawbacks. If we based the 3d Infantry in Minnesota, say, it might tend to produce a unit with a Scandinavian-American flavor, which would not hurt at all.

This system got a field test in our hardest war. It is generally conceded that Wisconsin did best with its Volunteer units in the Civil War, because the state's regiments were refilled with new men while keeping their organization intact. Other states raised new regiments in bewildering numbers while allowing veteran units to fall apart for lack of replacements. The famous Iron Brigade had three regiments from Wisconsin and two from other states, and its combat reputation was outstanding. A couple of smaller states may also have used this system.

We could base divisions in certain areas, subdividing them into regimental recruiting areas, for Regular outfits. National Guard units already draw from home areas, as does the Reserve. However, it seemed that after things got going in the last two wars, fillers came from everywhere.

We could name outfits after the long-forgotten Continentials, or come up with new names that appeal to local pride. We could go for names like 5307th Composite Unit, or 471st (And Only) Infantry Heavy Mortar Battalion. People could go for units like the 1st U. S. Sharpshooters, or the R. E. Lee Regiment, U. S. Infantry. Even the Russians sometimes name their units for morale: "Guards Divisions," and the like. And if anyone has a mechanical, IBM-style approach, it's them.

CWO JOHN P. CONLON
Newark, Ohio

OFF-DUTY EDUCATION

● While I thoroughly enjoyed Captain Meyer's article on off-duty education [January], I must disagree with most of his contentions.

Night Pursuit of College Algebra is not replacing Rifle Platoon in Night Attack. I think you will find that in a majority of cases, off-duty extension courses of the colleges are being pur-

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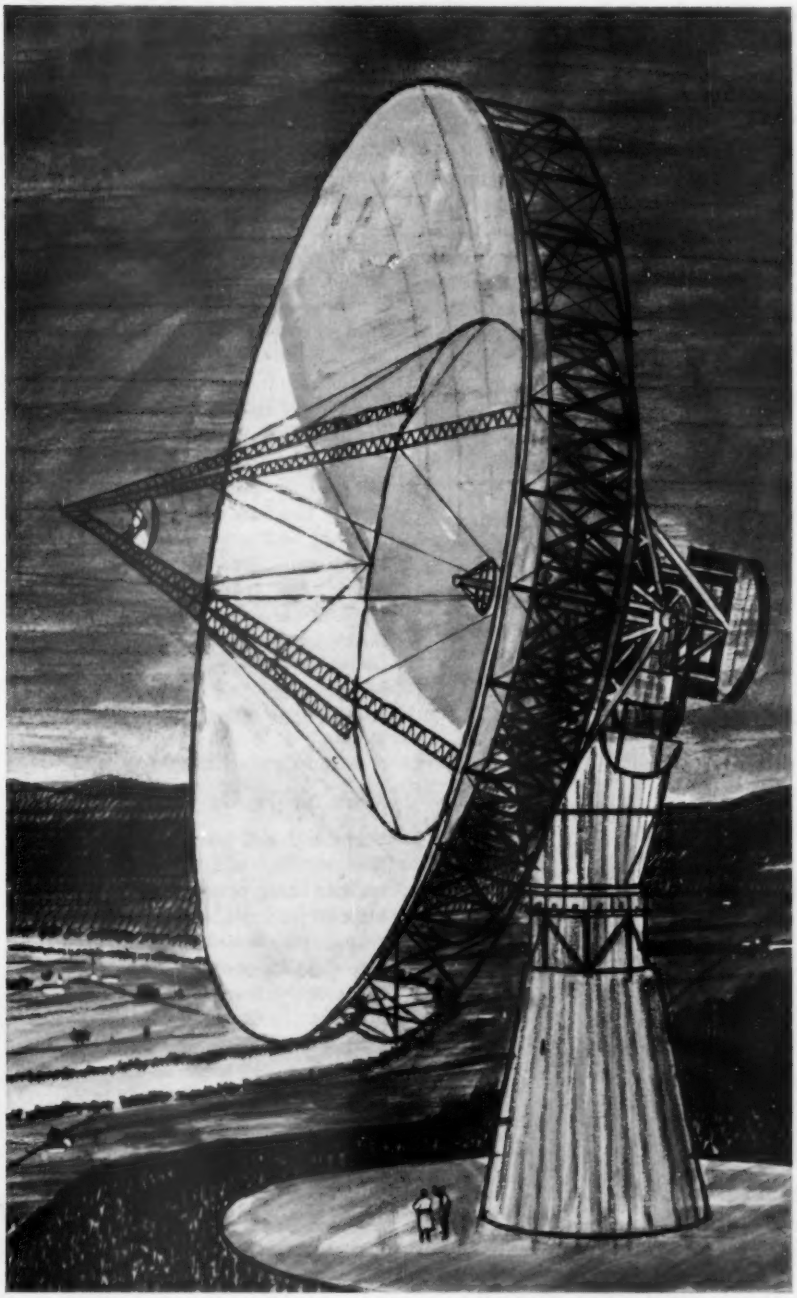

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LETTERS

sued around major headquarters; and further, by officers of more senior grades than platoon leaders. In the courses I have taken, the majority of students have been majors and higher. Admitting that at CONARC most officers *are* majors and higher, I have asked people in the classes who have studied at other places, and the consensus is that the same situation exists elsewhere. So you do not have people involved in these courses who are engaged in rigorous daytime training or climbing mountains with ranger units.

Captain Meyer's article contends that removal of Government aid to these students would drive many of them from the classroom. That is true, but I do not think the reason would be a sudden loss of interest. The principal reason would be economic hardship. Most of the officers and enlisted men enrolled in off-duty study courses have families. The Army does pay three-fourths of the tuition up to a maximum of $7.50 per credit hour! In the school where I am enrolled tuition is $17.00 per credit hour. That comes to $51.00 per course, and the Government pays $22.50 of it. That means two years of college training costs the Government $1,350.00. Since most officers are paying $1,710.00 for their share of this schooling, few could afford the other $1,300.00. So you can see that financial aid for education does not "give away" a college education; it only makes an education more accessible to those who are willing to work for it.

The point on which I agree with the article is the disapproval of persons studying because of pressure by commanders. I do not approve a policy which requires a man to spend money that he cannot afford, or learn things in which he may have no interest.

The idea of requiring college education of the officer entering the service today is a good one. However, this does not eliminate the problem of the next 15 years. Those officers who are captains through lieutenant colonel are the ones who will be holding the major staff positions in the near future. It is beneficial to the Army that they further their education. A careful check will show that most officers are taking courses that will benefit them throughout their careers. I don't know of any officer who has majored in basket-weaving or skindiving through the Army's educational program.

MICHAEL J. GATES
Hampton, Va.

Brisk Conference

Just what Mr. McNamara said about missile and destruction gaps at his now famous background "not for attribution" press briefing is moot, but at his first formal on-the-record conference a few days earlier he demonstrated an ability to field tricky questions deftly.

Example: asked if he looked forward to a "closer partnership between Defense and State" Departments, Mr. McNamara answered that he couldn't say how close it had been in the past but "I can guarantee that it will be close in the future."

The conference was a brisk, 30-minute affair, competently handled, and chock full of important news. In quick order the new Secretary announced:

- An immediate move to increase airlift.
- A speed-up of procurement of Polaris submarines.
- Amplified on President Kennedy's previously announced removal of overseas travel by dependents.
- A reduction in the number of assistant secretaries of Defense from seven to five.
- The formation of an office for management planning and organization to study Department of Defense organization. This group will be headed by the Department's General Counsel, Mr. Cyrus Vance.

During the question period Mr. McNamara amplified on these announcements and also revealed:

- There were no plans to redeploy our forces abroad at this time.
- Discussed his philosophy of management with emphasis on public statements on policy matters by officials of the departments and services.
- Guaranteed that the Defense and State Departments would work closely together in the future.
- Refused to comment in detail on subjects under study in the Department as a result of President Kennedy's directive, for a rapid appraisal of the nation's military posture and requirements.

Fuller exposition of some of these matters follow.

Secretary of Army takes oath. Mr. Elvis J. Stahr, Jr., is congratulated by Secretary of Defense Robert S. McNamara after taking oath of office. Between them is the Deputy Secretary of Defense, Roswell L. Gilpatric. In his greetings to the Army on becoming Secretary, Mr. Stahr said that he had "high confidence that we shall together go forward to achieve the goals to which the Army is committed by the nature and urgency of its mission."

Challenge to Service Families

Service families delighted that they may, after all, accompany their servicemen overseas are going to find themselves facing a challenging volunteer, self-policing austerity program to help rectify the dollar gap. While there will be some official prohibitions on the spending of dollars by servicemen and families overseas, most of the necessary $80 per year per person reduction in purchase of durable consumer goods on foreign market is going to depend upon the good sense and patriotism of service families.

Senior officials in the Department of the Army consider the problem one of the most difficult facing the services in the next several years. If it succeeds it will testify to the self-discipline of service families. If the program fails, agitation to reinstitute the ban on travel of dependents would likely be revived.

Until formal directives are written and distributed the official action of the Army and other services will not be known. Among the bans being considered may be a requirement that transportation to the U. S. of cars purchased overseas be borne by the purchaser rather than by the Government and possible disappearance of certain foreign-made goods from overseas post exchanges.

Airlift Looking Up

Secretary McNamara's plans for a fast step-up of airlift capabilities include the procurement of 53 more aircraft—30 jet and 23 turboprop transports, some to be delivered by June of this year.

Mr. McNamara said that procurement of the Boeing jets (C-135s, a modified version of the KC-135 tanker) would begin in June at the rate of two per month. This delivery schedule is to be achieved through diverting and then replacing some KC-135s. At the same time, Mr. McNamara said that the Defense Department will undertake an immediate build-up in production of the Lockheed C-130 from four to eight per month with phasing of production from the C-130B to the longer range C-130E.

The procurement of this aircraft is an interim speed-up of U. S. air-

lift capacity. It is but a stop-gap since the procurement of the proper kind of airlift aircraft for Army missions must await design and development of jets that may not fly before 1965.

An interesting question is how many of the planned new procurement will actually be available for troop airlift when needed. MATS wants to replace aging and overworked aircraft in its world-wide fleet, and past experience suggests that unless positive action is taken, Army airlift requirements may continue to receive short shrift.

Suitability of the jet KC-135 is also a question. It is a sideloader monster not well designed for combat loading and tactical movements. In the rush to modernize MATS, the wise, cautionary words of General Elwood "Pete" Quesada shouldn't be forgotten: "If we compromise the military [transport] fleet now, it will have been compromised for the next decade."

Two Down, More to Come?

To make an "impossible situation" a little less so, Mr. McNamara made a start toward reducing the swollen Pentagon secretariat. He reduced the number of civilian officials reporting to him and to the Deputy Secretary of Defense from 15 to 13 by combining the positions of Assistant Secretary for Properties and Installations, and Assistant Secretary for Supply and Logistics, and by adding the functions of Assistant Secretary for Health and Medical to the Assistant Secretary for Manpower. The remaining 13 are:

- Secretary of the Army;
- Secretary of the Navy;
- Secretary of the Air Force;
- Director, Defense Research and Engineering;
- Assistant Secretary, Comptroller;
- Assistant Secretary, International Security Affairs;
- Assistant Secretary, Manpower;
- Assistant Secretary, Installations & Logistics;

To Strengthen Our Military Tools

To meet this array of challenges—to fulfill the role we cannot avoid on the world scene—we must reexamine and revise our whole arsenal of tools.

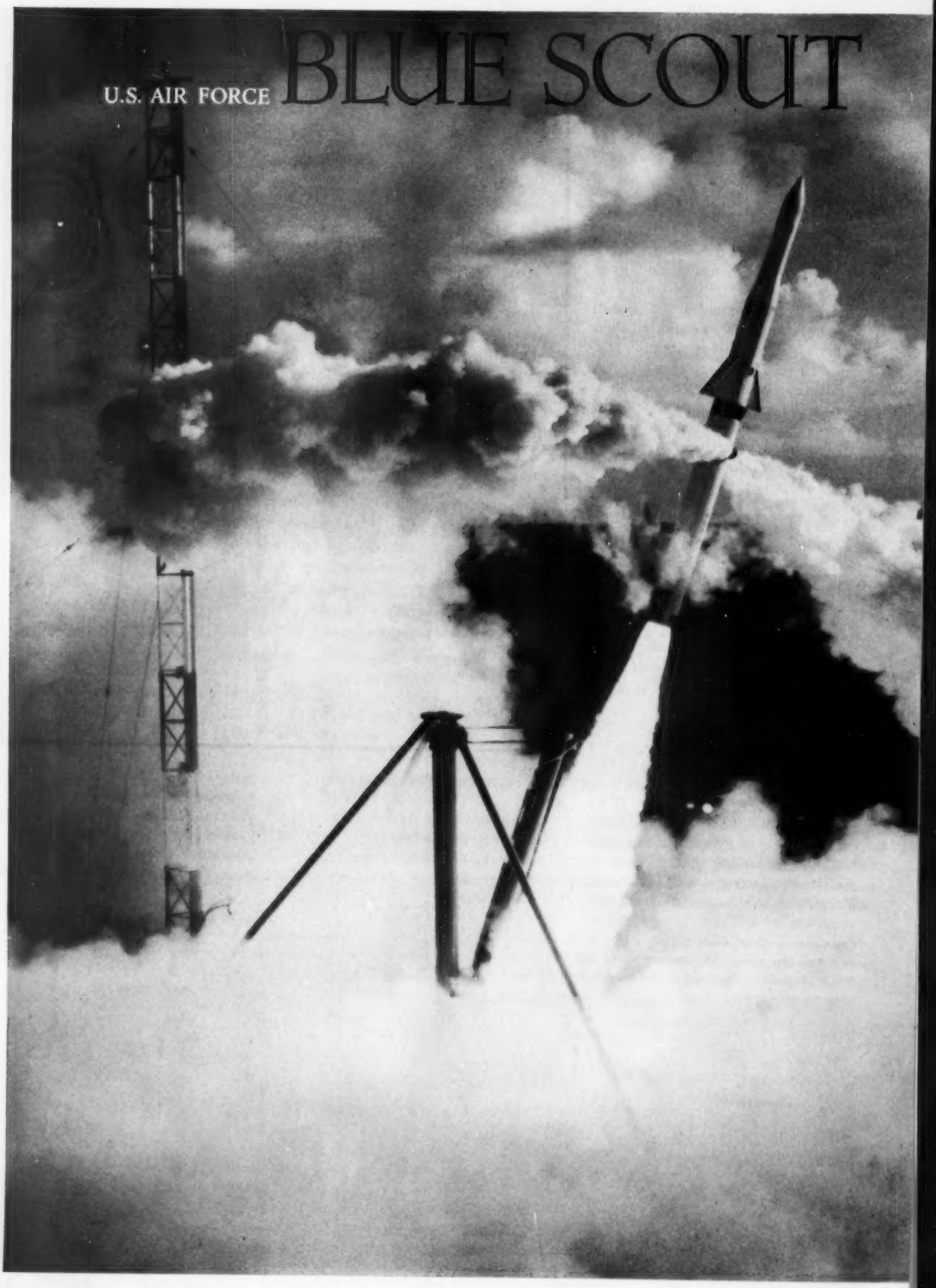
One must not overshadow the other. On the Presidential Coat of Arms, the American eagle holds in his right talon the olive branch, while in his left is held a bundle of arrows. We intend to give equal attention to both.

First we must strengthen our military tools. We are moving into a period of uncertain risk and great commitment in which both the military and diplomatic possibilities require a Free World force so powerful as to make any aggression clearly futile. Yet in the past, lack of a consistent, coherent military strategy, the absence of basic assumptions about our national requirements and the faulty estimates and duplication arising from inter-service rivalries have all made it difficult to assess accurately how adequate—or inadequate—our defenses really are.

I have, therefore, instructed the Secretary of Defense to reappraise our entire defense strategy—our ability to fulfill our commitments—the effectiveness, vulnerability, and dispersal of our strategic bases, forces and warning systems—the efficiency and economy of our operation and organization—the elimination of obsolete bases and installations—and the adequacy, modernization and mobility of our present conventional and nuclear forces and weapons systems in the light of present and future dangers. . . .

From the President's State of the Union Address
30 January 1961

Commander-in-Chief meets military chiefs. At the White House, President Kennedy poses with members of the Joint Chiefs of Staff, who are (left to right): Gen. David M. Shoup, Marine Corps; Gen. Thomas D. White, Air Force; Gen. Lyman L. Lemnitzer, Chairman; Adm. Arleigh A. Burke, Navy; and Gen. George H. Decker, Army.


U.S. AIR FORCE
BLUE SCOUT

LEFT: USAF technicians of 6555th Test Wing under technical supervision of Aeronutronic engineers erect Blue Scout on simplified launch pad prior to successful flight. The development of Blue Scout effectively bridges gap between larger, more expensive ICBM's and smaller sounding rockets in our advanced space research and test programs. The Blue Scout is the largest solid fuel missile ever fired at Cape Canaveral.

OPPOSITE: U. S. Air Force Blue Scout Jr., lifts off launch pad as spin rockets ignite. This unguided 4-stage missile was successfully launched on the first attempt.

U.S. AIR FORCE PHOTOS

The United States Air Force Blue Scout Program provides the Nation with a new and versatile low-cost family of test vehicles to support our military weapons and space systems development programs. It can be used in a variety of deep space probes, orbit missions, boost glide trajectories, and as a rocket and satellite command and control communications system. Blue Scout has already fired a 32-pound scientific payload 16,000 miles into space ...and a 392-pound payload in a controlled trajectory 1400 miles down the Atlantic Missile Range. Aeronutronic is systems engineer, payload and test contractor on this important Air Force program.

AERONUTRONIC DIVISION *Ford Motor Company*, DEFENSE PRODUCTS GROUP
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Write for information about Aeronutronic's capabilities and the career opportunities open for engineers and scientists.

The Blue Scout program, based on modifications of the NASA Scout, is under the executive direction of the U.S. Air Force Ballistic Missile Division, Air Research and Development Command. Above LEFT: Blue Scout is raised to a firing position on simplified launch pad. Because missile requires minimum ground support equipment, it is operable in a number of various field environments at minimum cost. *RIGHT:* Instrument package of Blue Scout is checked by Aeronutronic personnel and Air Force technicians. Accurate guidance system, data recovery system and final stage attitude control make Blue Scout adaptable to a wide variety of applications.

Assistant Secretary, Public Affairs;
General Counsel;
Special Assistant for Atomic Energy;
Special Assistant for Special Operations;
Special Assistant for Legislative Affairs.

In addition to these civilian officials, the Chairman of the JCS, Gen. Lyman L. Lemnitzer, reports to the Secretary of Defense. And so too, on occasion do the other members of the JCS.

NATO and the U. S. Commitment

Statements by the President and his Secretary of Defense lay to rest, at least temporarily, the possibility of a reduction in force of the nation's ground army commitment to the defense of Western Europe.

At his 8 February press conference, Mr. Kennedy said: "We for our part mean to go on as full and energetic partners in NATO, and in particular we wish to maintain our military strength in Europe." Mr. McNamara some days earlier had stated that there were no plans to "redeploy our forces abroad at this time."

This will hardly be the end of discussion of the matter, since there are Americans who believe that unless the western Europeans do more we should pull out of the NATO alliance, at least so far as our Army commitment is concerned. But without a meaningful Army commitment on the ground it is difficult to believe that U. S. protestations that NATO, in the President's phrase, "is our central and most important defensive alliance" would be very credible either to our friends in western Europe or to the men in the Kremlin.

Withdrawal of even a significant portion of the five-division force we maintain in Germany could be popularly conceived as admission that our policy of the past 10 years is a failure and that we are prepared to give up on Berlin and indeed all of Western Europe. This is inconceivable.

Certainly the French, the Germans, the British and perhaps the smaller nations of the alliance should make a larger contribution to the ground defense of Europe. The failure of these nations to contribute to their own defense in the measure that they are able is one reason why the situation of NATO is precarious. It also lends credence to the arguments of those Americans who "would bring the boys back home," even though it is self-evident that this will not solve the problem of how to keep the Soviet Union out of western Europe.

This is a situation that needs constant review and analysis. In 1951 it was generally agreed that five Army divisions was about the right U. S. commitment to NATO. But this is 1961, and while with NATO it does seem that the more things change the more they are the same, still the situation cannot be considered static. To make NATO virile a lot of hard work is required of the leaders of all the NATO nations, and their foreign and defense secretaries. As Dr. Johnson said, friendship must be kept in constant repair.

Patterson Award. The 1960 Patterson Memorial Award, given annually to the outstanding graduate of Infantry OCS at Fort Benning, Ga., has been won by Second Lieutenant Howard R. Mosley of the 1st Airborne Battle Group, 187th Infantry, stationed at Fort Bragg, N. C.

Lieutenant Mosley received the award in a ceremony at Fort Benning, in the presence of Secretary of the Army Elvis J. Stahr, Jr., and Mrs. Robert Patterson, widow of the late Judge Patterson, DSC winner in World War I and Undersecretary and Secretary of War in World War II.

Lieutenant Mosley, of Passaic, N. J., entered the Army in 1955 and worked his way up to sergeant first class prior to attending OCS.

General George H. Decker, Army Chief of Staff, receives his certificate of membership in "Scabbard and Blade," ROTC honor society, from Cadet Gordon Clinchard of Lafayette College. General Decker is a Class of '24 graduate of Lafayette.

Reserve Tech Program. Operating principles and procedures of an Army Reserve Technician Program (ART) are being developed by the Office of the Deputy Chief of Staff for Personnel and the Civil Service Commission. Under the program, civilian positions involving administrative, supply, and maintenance type duties at reserve training centers, so far as practicable, will be filled by persons who are, or are able to become, members of the Army Reserve.

Document Fully. The soldier contemplating requests for compassionate transfer or deferment from overseas orders should make himself familiar with the provisions of AR 614-100, the Army says. Fully documented requests are necessary because reviewing authorities at Department of the Army cannot accept unsupported statements of personal hardship as a basis for decision. Full documentation will permit a prompt and accurate review and a decision fair to both the individual and the service.

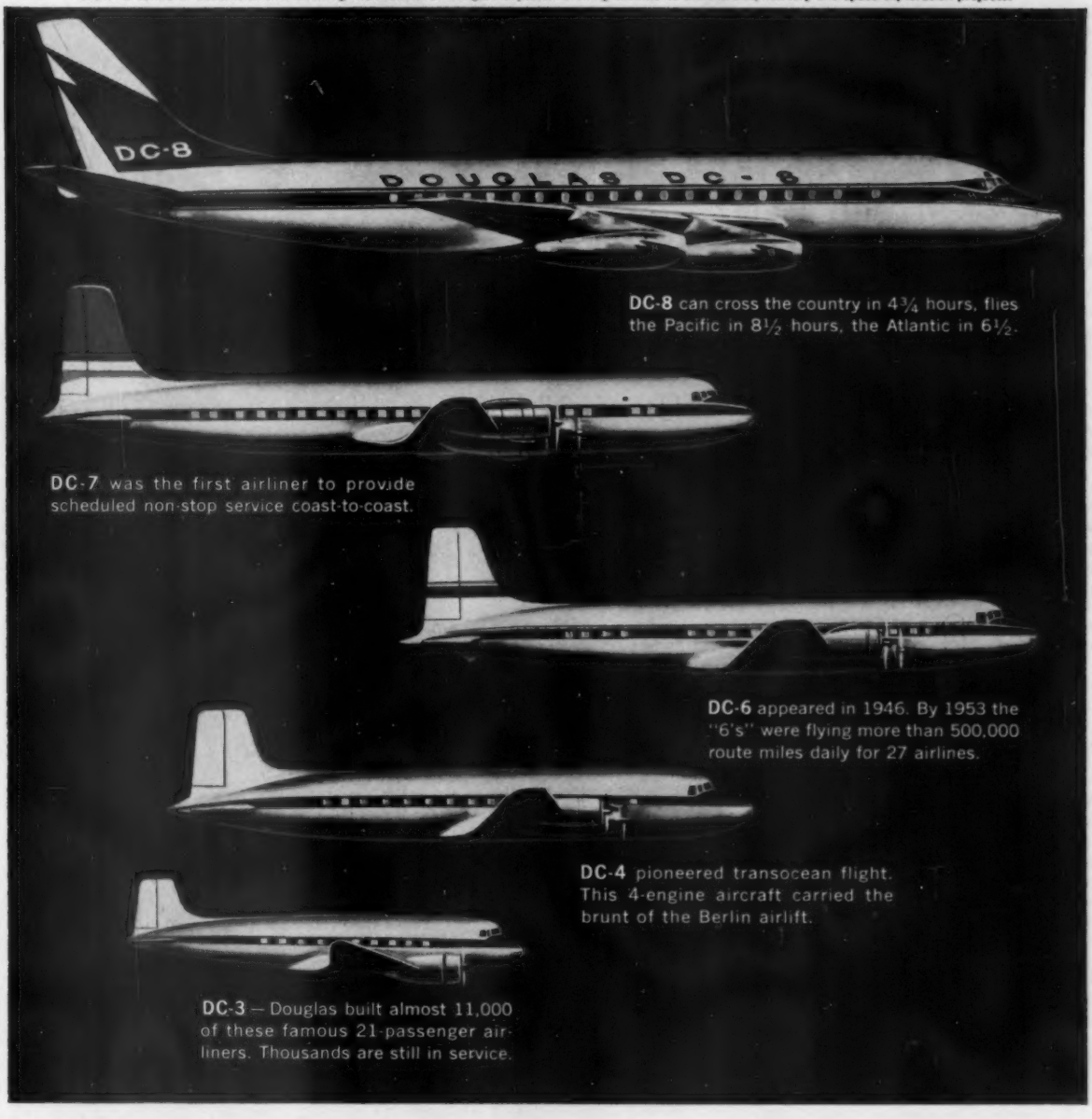
Signal Officers Needed. Officers on active duty who have a background or interest in communications can help alleviate a shortage of communicators in the Signal Corps. For further information, interested officers should write or visit the Personnel and Training Division, Office of the Chief Signal Officer, Washington 25, D. C.

Bell Award to Army Aviation. The Grover E. Bell Award for outstanding work in the field of helicopter development has been presented to the Combat Developments Office of the Army Aviation School, Fort Rucker, Ala.

The Bell Award was established by the late Lawrence E. Bell, founder of Bell Aircraft, in memory of his brother who was killed in a 1913 air crash. It was accepted by Maj. Gen. Ernest F. Easterbrook, Army Aviation Center commander, at the Honors Night Dinner of the Institute of Aerospace Sciences in New York City.

Basis for the award was CDO's development of the helicopter as a recon and suppressive fire vehicle which "significantly increased the helicopter's effectiveness."

One of a series of advertisements showing the breadth of Douglas experience being devoted to commercial, military and space-exploration projects.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How narrow the oceans have become! How small the world! And how quickly the shrinking has occurred!

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Douglas, builder of the 5 great "DC" airliners that did so much to shrink the world you live in, is now at work on the great rockets and rocket ships which will shrink the solar system.

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ARMY editorials

The President's Inaugural Address

We observe today not a victory of party but a celebration of freedom—symbolizing an end as well as a beginning—signifying renewal as well as change. For I have sworn before you and Almighty God the same solemn oath our forebears prescribed nearly a century and three-quarters ago.

The world is very different now. For man holds in his mortal hands the power to abolish all forms of human poverty and all forms of human life. And yet the same revolutionary beliefs for which our forebears fought are still at issue around the globe—the belief that the rights of man come not from the generosity of the state but from the hand of God.

We dare not forget today that we are the heirs of that first revolution. Let the word go forth from this time and place, to friend and foe alike, that the torch has been passed to a new generation of Americans—born in this century, tempered by war, disciplined by a hard and bitter peace, proud of our ancient heritage—and unwilling to witness or permit the slow undoing of those human rights to which this nation has always been committed, and to which we are committed today at home and around the world.

Let every nation know, whether it wishes us well or ill, that we shall pay any price, bear any burden, meet any hardship, support any friend, oppose any foe to assure the survival and the success of liberty.

This much we pledge—and more.

To those old allies whose cultural and spiritual origins we share, we pledge the loyalty of faithful friends. United, there is little we cannot do in a host of new cooperative ventures. Divided, there is little we can do—for we dare not meet a powerful challenge at odds and split asunder.

To those new states whom we welcome to the ranks of the free, we pledge our word that one form of colonial control shall not have passed away merely to be replaced by a far more iron tyranny. We shall not always expect to find them supporting our view. But we shall always hope to find them strongly supporting their own freedom—and to remember that, in the past, those who foolishly sought power by riding the back of the tiger ended up inside.

To those peoples in the huts and

(Continued on page 18)

Slogans, Go Home

Is there a "missile gap" and, if there is one, can it be replaced with a "destruction gap" which also may or may not exist? And what about the "deterrent gap" which may or may not be another name for the same thing, if there is such a thing? This semantic nonsense could be stomached if it wasn't carried on far too often by intelligent people who think national security affairs are of great importance.

Don't be alarmed, says a friend. This is but a manifestation of the present state of our civilization. To have status you must have a slogan. Madison Avenue says so. In time sloganeering will lose status just like the big houses of the very rich at Newport.

Perhaps so. But that doesn't get at the roots: the hucksters make slogans when the visible merits of the product they peddle are weak or don't exist.

When we make national defense by coining slogans it is because of a lack of a coherent and sound national strategy around which all can rally. That is the pressing need. And it can be neither glib nor cheap.

It can't be made on Madison Avenue or in Wall Street. Nor at the military war colleges or the Foreign Service Institute. It must be marked "Made in the White House" and it must take into account all the enormous and diffused talents and capabilities of the United States.

Across the Wide Frontier

In defense, at least, the New Frontiersmen were moving purposely across wide rivers of problems, their course set for the rocky highlands where the tough decisions would have to be made.

"In the 1960s it is our works, not our rhetoric, which constitute the real test of our survival," said Presidential candidate John F. Kennedy last fall. And while there doesn't seem to be any appreciable diminution of fluent rhetoric, the Pentagon salient of the New Frontier is energetic. At policy-making levels, the flaps have been intense and some rose to historic proportions.

"They work fast. They ask the right questions and they are not easily fooled," observed one staff officer in a burst of uncharacteristic candor. "If they don't hit the bull with the right answers the first shot, it won't be because they didn't have the target within their sights."

Other scouts patrolling the well-travelled E-ring and the adjacent badlands of the interior report that the knowledge of the New Frontiersmen is surprisingly cogent and up-to-

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villages of half the globe struggling to break the bonds of mass misery, we pledge our best efforts to help them help themselves, for whatever period is required—not because the Communists may be doing it, not because we seek their votes, but because it is right. If a free society cannot help the many who are poor, it cannot save the few who are rich.

To our sister republics south of our border, we offer a special pledge—to convert our good words into good deeds—in a new alliance for progress—to assist free men and free governments in casting off the chains of poverty. But this peaceful revolution of hope cannot become the prey of hostile powers. Let all our neighbors know that we shall join with them to oppose aggression or subversion anywhere in the Americas. And let every other power know that this hemisphere intends to remain the master of its own house.

To that world assembly of sovereign states, the United Nations, our last best hope in an age where the instruments of war have far outpaced the instruments of peace, we renew our pledge of support—to prevent it from becoming merely a forum for invective—to strengthen its shield of the new and the weak—and to enlarge the area in which its writ may run.

Finally, to those nations who would make themselves our adversary, we offer not a pledge but a request: that both sides begin anew the quest for peace, before the dark powers of destruction unleashed by science engulf all humanity in planned or accidental self-destruction.

We dare not tempt them with weakness. For only when our arms are sufficient beyond doubt can we be certain beyond doubt that they will never be employed.

But neither can two great and powerful groups of nations take comfort from our present course—both sides overburdened by the cost of modern weapons, both rightly alarmed by the steady spread of the deadly atom, yet both racing to alter that uncertain balance of terror that stays the hand of mankind's final war.

So let us begin anew—remembering on both sides that civility is not a sign of weakness, and sincerity is always subject to proof. Let us never negotiate out of fear. But let us never fear to negotiate.

Let both sides explore what problems unite us instead of belaboring those problems which divide us.

Let both sides, for the first time, formulate serious and precise proposals for the inspection and control of arms—and bring the absolute power to destroy other nations under the absolute control of all nations.

Let both sides seek to invoke the wonders of science instead of its

(Continued on page 73)

date. "They're not beating any old horses of doctrine or ideology," one returning observer reported. "They're full of fresh ideas, and people who used to get ahead because they could make people feel comfortable by making new ideas sound like grandpa's gramaphone are passé. The new look, if you'll pardon the expression, is to be brisk, factual and unsentimental. Remember that college professor you had who knew his stuff and also knew when you didn't know yours and always told you so? Well, this gang is like him."

A most important part of their task is to strengthen the nation's conventional forces. This the President has said needs to be done. The first steps will be taken in the Fiscal Year 1962 program of the New Frontiersmen. Its dimensions aren't known at the time of writing but probably will have been announced by the time this is read.

Certainly two requirements are paramount: an increase in the size of the Active Army and a rapid modernization of its tools and equipment. An increase in the Active Army should provide sufficient manpower to enable the Army to

- Maintain the deployment of five full strength divisions and supporting forces in central Europe.
- Replace with American soldiers the Koreans in the two U. S. divisions in Eighth Army in Korea.
- Provide sufficient tactical surface-to-surface and surface-to-air missile groups to modernize fully Seventh and Eighth Army artillery.
- Beef up the Strategic Army Corps (STRAC) in the U. S.
- Create overseas-based mobile task forces of small division size to act as firemen assigned to quenching unrest and small wars in many of the so-called underdeveloped areas of the world.
- Provide forces for increasing the number of Nike Hercules batteries and to man Nike Zeus batteries when the time comes to do so. (This presupposes that the important Nike Zeus project will get the green light to move ahead.)
- Maintain a virile ready reserve (Army National Guard and Army Reserve).

This run-down of possible measures to beef up the Army includes ideas much discussed and long advocated in ARMY Magazine and within the Army.

However, it is done, the strengthening of the nation's conventional war capability, and most importantly the Army, will provide the President and the Secretary of State with only one of the many tools they need to redress the balance that has been running against the United States and the Free World. But it is a vital one and the creation of a significant conventional war force will, after the President and the Congress act to authorize it, impose on the Army (and its sister services) difficult and important tasks that it will carry out expeditiously and in a spirit of enthusiasm.—J.B.S.

Opening Radiant "Windows" to the Universe . . . Man's world has been compared to the inside of a dark room: his only view outside has been through a tiny window in the wall.

This analogy is accurate. Visible light, for example, is only about 3% of the entire electromagnetic spectrum—the radiant energy that fills our world with life. What we know about the other 97% is little indeed, despite the centuries men have wondered, probed and experimented. Our "windows" are small and often the view is obscure.

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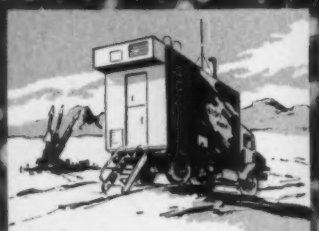
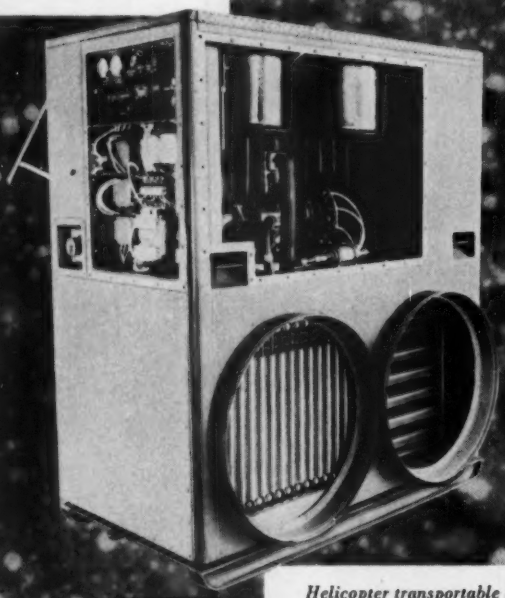
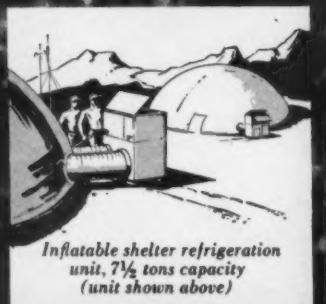


Trailer mounted refrigeration unit, 5 tons capacity





Inflatable shelter refrigeration unit, 7½ tons capacity (unit shown above)

Helicopter transportable hut refrigeration unit, 1½ tons capacity

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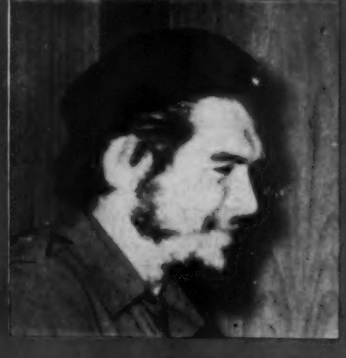
LA GUERRA DE GUERRILLAS

Castro's top field commander tells how they won

Condensation of a book by

CHE GUEVARA



about this article

One of the quixotic facts of this century is that pathologically secretive revolutionaries and dictators have outlined in great detail their plans for seizing and maintaining power. Even more quixotic, however, has been the refusal of the normally frank democracy and its leaders to believe these writings even when the unfolding sequence of events follows the pattern outlined in the writings.

If we Americans can rationalize away our lack of belief in the writings of Lenin, Hitler, Mao and Stalin because of our general non-involvement with the countries involved prior to World War II, we cannot laugh away or ignore either the threats of Khrushchev or the dangers to our national interests by recent events in Cuba. Therefore, this abridgment of a book by Ernesto Guevara, Fidel Castro's field commander during the Cuban Revolution, is of major interest and concern to all of us. Che Guevara, an Argentine by birth, is now President of the National Bank of Cuba and a driving, if not the driving force, in pushing Cuba ever deeper into the Communist orbit.

It is known that Che Guevara has long been a Communist, although the record doesn't show that he ever received a formal Communist education in Moscow. He must, however, have read many of the works of leading Communists. Consequently, he has undoubtedly been influenced by the writings of Mao Tse-tung on guerrilla warfare. The exact extent is unknown although there is a uniformity in thought as the various editorial notes accompanying this condensation will indicate.

This book is a warning similar to other revolutionary writings. On the more hopeful side, one sees guerrilla-like events also beginning to occur in Cuba itself, for it would appear that Communist revolutionaries quickly forget the high ideals they proclaim when fighting.

At the same time it must be noted that the U. S. press has reported that Spanish language editions of this book are flooding Latin America and that Moscow has announced that a Russian language edition is to be published later this year.

There is in all this a major concern for soldiers. The United States Army has had little experience against guerrillas since the Indian wars. Our modern wars have been tidy affairs with little or no disruption of our rear areas except by normal enemy bombardment, or other action with which we were equally normally prepared to cope. Therefore, we have no body of experience for dealing with rear-area security when presented with a guerrilla threat.

Field Manual 31-21, *Guerrilla Warfare and Special Forces Operations,* concerns itself almost exclusively with the use of guerrillas in support of our operations and says nothing about defense. Our doctrine would appear to be contained in the statement, "security is the commander's responsibility." This, however, is insufficient, as the German experience in Russia proved. Too late, the Germans began to organize anti-guerrilla bands, to create methods of procedure and to prepare special units. The damage had been done. The senseless terrorism and reprisals of the SS could not be undone and the entire German rear area was aflame with guerrilla action. It is an accepted fact that this guerrilla activity was a major factor in the Russian victory.

While present troop training schedules call for sessions devoted to defense against guerrillas, we have developed no great body of official literature on the subject.

It is true that FM 31-15, *Operations Against Airborne Attack, Guerrilla Action, and Infiltration* exists. However, it was published in January 1953 and includes very little concerning anti-guerrilla tactics as such. In essence, this manual states: "The commander charged with the responsibility of defending an area exposed to a guerrilla threat must skillfully combine offensive and defensive tactics in a ratio commensurate with the forces which he has available." However, it is too late to try the "skillfully combine" advice in the midst of a full-scale guerrilla threat. It must be done now. Therefore, the abridgment that follows should provide much material for sober speculation. How would we as an army meet concerted guerrilla activity, given the austerity of our current organization?

A few words about the condensation that follows are in order. Repetitive material has been omitted. However, only a few changes have been made in the wording so as to insure retention of the full flavor of the original work. This has meant, in some cases, retention of the tortured and involved phraseology which appears to be characteristic of works of this type.

The large type briefings at the beginning of each section are editorial insertions that do not appear in the original.—THE EDITORS.

Essentials of Guerrilla Warfare

> The guerrilla force is the fighting vanguard of the people's struggle against their oppressors and its agent—the professional army. Guerrillas strike and flee . . . give the enemy no rest. Their final purpose is to annihilate the enemy and to obtain victory.

The armed victory of the Cuban people over the Batista dictatorship, an epic triumph recognized throughout the world, clearly demonstrates the ability of a people to free themselves, by means of guerrilla warfare,[1] from a government that is oppressing them.

The Cuban Revolution made three fundamental contributions to the mechanics of revolutionary movements in America:

(1) The forces of the people can win a war against the army.

(2) It is not necessary to wait for the fulfillment of all conditions for a revolution because the focus of insurrection can create them.

(3) The area for the armed struggle in underdeveloped America is the rural regions.

Independent of an analysis to be made later, we place the foregoing conclusions of the Cuban revolutionary experience at the head of this work as its basic contribution.

When this picture was snapped in the Sierra Maestra mountains of Oriente Province, Fidel Castro was a little known leader of a band of rebels that were in revolt against the government of Fulgencio Batista

War is subject to a definite system of scientific laws. Anyone violating them will meet defeat. Guerrilla warfare is governed by these same laws[2] but is also subject to special laws that derive from the particular geographic and social conditions in each country.

Chapter I. General Principles

Our present task is to analyze this type of struggle and the rules to be followed by a people seeking their freedom.

First, it is necessary to determine the combatants in a guerrilla war. On the one side is the center of oppression and its agent—the professional army. On the other side is the population of the nation in question. It is important to point out that guerrilla warfare is a struggle of the people. The guerrilla force is merely the fighting vanguard of the people and derives its great strength from its roots in the mass of the population. The guerrilla force is not, therefore, to be regarded as numerically inferior to the army it is fighting although it is inferior in firepower. It is necessary to resort to guerrilla warfare when there is support from a majority

[1] There is an important point here: United States Army doctrine in FM 31-21 visualizes guerrilla warfare in support of conventional forces and as part of an over-all campaign. Guevara is visualizing guerrilla activity as a revolutionary action to overthrow an established government. Thus, paragraph 18 of FM 31-21 states: "Guerrilla operations are not ordinarily effective unless coordinated with conventional military operations. The theater commander must often support the guerrillas with arms, ammunition, and equipment."

[2] See Mao Tse-tung, *Selected Works*, II, 124: "Guerrilla warfare is different from regular warfare only in degree and in the form of manifestation."

group but only a limited quantity of arms to defend against oppression.

The guerrilla counts, therefore, on the support of the entire population of a locality. This is an indispensable condition. We can see this very clearly if we consider the example of bands of robbers operating in a region. The band has all the characteristics of a guerrilla army: homogeneity, respect for the chief, bravery, knowledge of the terrain and even, in many cases, complete understanding of the tactics to be used. The band lacks only the support of the people. Inevitably, therefore, the robber band is arrested and exterminated.

For the proper analysis of guerrilla warfare, it should be noted that there are two different types: first, the guerrillas supplement the effort of a large regular army as in the case of the Ukrainian guerrillas; second, an armed group is fighting against an established government. We are not interested in the first type. We are interested only in the type where an armed group is carrying on a fight against an established colonial (or other) power. This is a group that has its base in a rural region and is operating in and from that region.

It is important to remember that guerrilla fighting is only a beginning or preparation for conventional warfare. The possibilities for the growth of the guerrilla force and for changing the type of fighting to conventional warfare are as numerous as the possibilities for defeating the enemy in each of the separate battles or skirmishes that take place. For this reason, it is a fundamental principle that there must never be a lost battle or skirmish.

The fundamental tactic is to strike and flee continually so that the enemy gets no rest. Though this appears somewhat negative in character, it is, nevertheless, consistent with the general strategy of guerrilla warfare, which has the same final purpose as any other form of warfare: to annihilate the enemy and to secure victory.

War is a struggle in which both sides attempt to annihilate one another.[3] In order to achieve this purpose, they use force, subterfuge, trickery or any other device at their disposal. Military strategy and tactics reveal the aspirations of the military leaders and their methods of achieving objectives. The method always contemplates taking advantage of all the weak points of the enemy. If we compare a war of position with a guerrilla war, we can see that in a war of position the action of each platoon of a large unit corresponds to the action of a guerrilla force. The platoon may commit acts of treachery, will engage in night operations, and will attempt to achieve surprise. If it does not use these methods, it is only because it has not found the watching enemy off guard. However, the guerrilla force is a self-contained unit free to move anywhere, and there are always large areas unguarded by the enemy. Consequently, it is always possible to use the tactics described and to take advantage of surprise. Therefore, it is the duty of the guerrilla to use these tactics.

Guerrilla combat is a phase of warfare that cannot of itself attain complete victory.[4] It is one of the primary phases of a war of liberation and continues to grow in importance as the guerrilla army acquires the characteristics of a regular army. When the guerrilla army acquires a regular status, then it will be ready for decisive attacks on the enemy and thus secure victory. The triumph will always be the product of the regular army even though the regular army had its origins in a guerrilla force.

Guerrilla Strategy

> The first duty of the guerrilla is to keep from being destroyed. Action against the enemy should be constant. A strong base of operations is essential but this may be expanded as the guerrilla force becomes stronger. There finally comes the time to advance against the strongholds of the enemy . . . to defeat him and attain the final objective—victory.

Strategy means the analysis of the objectives to be achieved in light of the total military situation and the courses of action available to achieve those objectives.

For a correct understanding of strategy to be followed by a guerrilla force, it is necessary to make a profound analysis of the courses of action available to the enemy. The guerrilla must analyze the resources available to the enemy, his

[3] The interesting point here is that Guevara means there are no conventional type military objectives in a guerrilla war: a given hill or town is meaningless as an objective. The objective is always to annihilate whatever force the guerrillas attack. *Ibid.*, 121, uses this same type of thought when Mao says, "All guiding principles for military operations proceed without exception from one basic principle; that is, to strive as far as possible to preserve one's own strength and annihilate that of the enemy."

[4] *Ibid.*, 151, says: "Since the war is protracted and ruthless, it becomes possible for guerrilla units to go through the necessary process of steeling and to change gradually into regular armies; consequently, with their mode of operations gradually transformed into that of regular armies, guerrilla warfare will develop into mobile warfare."

strength in men, his mobility, his popular support, his armament, and his leadership. From this analysis, the guerrilla must adapt his own strategy so as to obtain his final objective which is to defeat the enemy army.

There are other fundamental matters to be studied: the enemy's tactics for using his equipment; exact estimates of the value of a tank in a struggle of this kind; the value of a plane; and the kind of arms and equipment possessed by the enemy. It is important to note here that if a guerrilla has a choice, he must always choose the weapons of his enemy because the guerrilla always lacks equipment and arms. Therefore, if he chooses the enemy's weapons the enemy will be the guerrilla's supplier. Once this study is made and the objectives evaluated and analyzed, it is necessary to begin planning for the achievement of the final objective. These plans will be made in advance but will be changed as needed to meet unforeseen circumstances that arise during the fighting.

In the beginning, the primary duty of the guerrilla is to keep himself from being destroyed. It will gradually become easier for guerrilla units to adapt themselves to the new manner of life involved in fleeing from and avoiding the enemy forces sent for their destruction. This objective attained, the guerrillas will find positions whose inaccessibility prevents the enemy from attacking them. Gradually, larger forces will be created and the process of weakening the enemy should begin. The weakening will take place initially in locations nearest the points of active fighting against the guerrilla army. Later, the weakening can be extended to deeper portions of the enemy territory where his communications and bases of operation can be struck and harassed to the maximum extent of the guerrilla capability.

The striking action should be constant. An enemy soldier in the zone of operations should not be allowed to sleep. The outposts should be systematically attacked and destroyed. At all times the impression should be created that the enemy is completely surrounded. This can be done by the use of patrols. To accomplish this, the complete cooperation of the people is necessary as well as a thorough knowledge of the terrain. These are two essential factors to which the guerrilla must constantly pay attention.

Certain well-organized groups that have shown ability in heretofore less dangerous work may now be used for sabotage duties. This is a terrible weapon which can paralyze entire armies or the industrial life of an entire area. It leaves the inhabitants without industry, light, water, communications, or even the ability to leave their homes except at certain hours. If this be accomplished, the enemy's morale, including that of combat units, will be weakened.

All of this presupposes an enlargement of the area involved in the guerrilla action although there should never be an exaggerated increase of this territory. A strong base of operations [5] must be maintained at all times, and it must continue to be strengthened during the course of the war.

[5] *Ibid.*, 134-144, says, ". . . Guerrilla warfare could not be maintained and developed for long without base areas, which are indeed its rear." He then gives a complete discussion of various types of base areas and the problems involved in establishing them.

It is, of course, necessary to take measures to insure the indoctrination of the inhabitants of the base region as well as to take necessary precautions against the implacable foes of the revolution.

When the original guerrilla force has reached suitable strength in men and arms, it should form new guerrilla columns. Ultimately, the territory occupied by the various columns is too small to contain them. The columns advance toward the regions strongly defended by the enemy. Then, the columns unite to form a compact battle front able to engage in a war of position as in the case of a regular army. However, the old guerrilla army must not become separated from its base because the work of forming new guerrilla forces behind the enemy lines must continue. These forces then operate in the same manner as the first until the new territory is overcome.

Thus the moment comes for attacking, for besieging cities, for routing reinforcements, for increasingly daring action by the excited masses in all of the national territory, for the attainment of the final objective—victory.

Guerrilla Tactics

> Guerrilla forces are mobile, use surprise, deception and sabotage. Night operations are normal. They have full knowledge of the terrain and peoples in the area of operations. They rearm with captured weapons and ammunition and depend upon captured stores for many essential supplies.

In military terminology, tactics constitute the practical methods of achieving great strategic objectives.

Mobility is a fundamental characteristic of a guerrilla force. In a few minutes it can be far from the immediate scene of action, or in a few hours it can be far from the region of action, if this is necessary. This permits a constantly changing front and thus avoids any form of encirclement. Consistent with the phase of the war a guerrilla force can devote itself exclusively to avoiding encirclement and to prevent being trapped into a decisive, unfavorable battle, or it can conduct counter-encirclement operations. In these a small group of men is presumably surrounded by the enemy when suddenly the enemy finds himself surrounded by a larger contingent. The first men, situated in an impregnable position, were merely the decoy to lure the enemy into a trap to be surrounded or annihilated in some manner.

A characteristic of this war of mobility is what is called "minuet," by analogy with the dance of the same name. For example, the guerrillas surround an enemy column with small groups of five or six men in several locations (situated so they will not in turn be surrounded). Then fighting is initiated at one of these points, and the enemy advances towards the attacking force. The guerrillas retreat, keeping contact with the enemy. Now, another group initiates an attack. The enemy will move to the new point and the guerrillas repeat their former action. With such successive operations an enemy column can be immobilized without great danger. The enemy is forced to use large quantities of equipment, and the morale of his troops is weakened.

This same procedure can be used at night, with greater aggressiveness because it is much more difficult to surround the guerrillas. We can say that night fighting is another characteristic of guerrilla forces. It permits them to advance and to maneuver in territory that is not well known and thus avoid betrayal by informers. The numerical inferiority of a guerrilla force requires that attacks take place by surprise. This is the great advantage that enables guerrillas to inflict casualties on the enemy, without loss to themselves.

A guerrilla soldier killed in action should never be left with his arms and equipment. It is the duty of every guerrilla soldier to recover at once the precious weapons and equipment of a fallen comrade. The manner of using weapons is another characteristic of guerrilla warfare. In any combat between a regular force and guerrillas, each side can be identified by the nature of its fire. The regular army fires heavy concentrations, but the guerrillas fire separate, accurate bursts.

Another fundamental characteristic of the guerrilla soldier is his ability to adapt himself to any conditions or to turn changing battlefield situations to his advantage. In contrast to the rigid methods of classical warfare, the guerrilla invents his own tactics for each moment of the fight and constantly surprises the enemy.

Primarily, there are three kinds of defensive positions: elastic positions, special positions which the enemy cannot pass, and positions suitable for diversionary actions. Instances are frequent where the enemy observes with surprise that a gradual, easy advance is suddenly and forcefully stopped, with no possibility of going farther. This is because the positions held by the guerrillas, when it has been possible to make a complete study of the terrain, are impregnable. It is not necessary to count how many soldiers may attack but how many can defend a position. Once this number is determined the position can be defended against a battalion almost always, if

not always. The great task of the leader is to make the proper choice of the time and location for defending a position to the end.

The manner of attack of a guerrilla army is also different: it begins with surprise—furious, implacable—and suddenly the assault is completely stopped. The surviving enemy force believes the attackers have gone, becomes calm again and resumes normal activities within the position or besieged city. Suddenly the same kind of attack breaks out in another place. As another example, a post defending a sector is suddenly attacked, overcome, and falls to the guerrillas. The basic features are surprise and rapidity of attack.

Sabotage is always an effective weapon when well handled. Sabotage should never be used against unimportant means of production so that it needlessly paralyzes an unessential sector of the population and leaves people without work. Sabotage against a soft-drink factory is ridiculous, whereas sabotage against a central electric plant is absolutely correct and commendable. In the first instance a few workers are affected and there is no effect on general industrial activity. In the second, workers are also affected but this is entirely justified by the total paralysis of the life of the region.

Aviation is one of the favorite weapons of the regular army. However, this weapon cannot be used effectively in the first stages of guerrilla warfare, for there are only small, hidden groups of men scattered in rough terrain.[6] The effectiveness of the air weapon depends upon systematic destruction of organized and visible positions of defense. For these conditions to exist, there must be large concentrations of men in the defenses, but this is not true of guerrilla positions. Aviation can, nevertheless, be effective against marching columns in level or unprotected terrain. This danger, however, is easily avoided by night marches.

One of the enemy's weakest points is his highway and rail transport. It is practically impossible to guard every part of a road or railway. Therefore, traffic can be stopped by explosives placed at any unguarded point. Explosions can be caused when a vehicle is passing not only to make the vehicle unusable, but also to cause considerable loss of enemy lives and materiel.

There are various sources for explosives: they can be brought from other regions; they can be obtained from unexploded bombs or shells of the enemy; or they can be made in secret laboratories within the guerrilla area. There are many ways

of using explosives; the manufacture of bombs and other devices depends upon the resources of the guerrilla forces.

The practice of concealing guerrilla groups along roads to explode mines and annihilate survivors is most remunerative against equipment and weapons. The surprised enemy does not use his ammunition and does not have time to escape. Thus, the guerrillas obtain considerable results at little cost.

As these blows are struck the enemy will change his tactics and instead of sending out vehicles separately will use motorized columns. Nevertheless, it is possible by proper choice of location to achieve the same results by breaking up the column and concentrating forces on one vehicle. In these instances it is always necessary to observe the essential features of guerrilla tactics, which are:

(1) Absolute knowledge of the terrain;

(2) Safeguarding escape routes;

(3) Knowledge and vigilance as to all secondary roads leading to the place of attack;

(4) Knowledge of the populace of the area and its total capabilities as to supplies and transport;

(5) Temporary concealment or permanent concealment when it is necessary to leave wounded comrades;

(6) Numerical superiority at a particular point of the action;

(7) Complete mobility; and possibility of counting on reserve forces.

If all these tactical requirements are fulfilled,

[6] *Ibid.*, 127 says: "It is precisely because they are weak and small that they can appear and disappear mysteriously in the enemy's rear and completely baffle him—such great freedom of action is something that massive regular armies can never enjoy."

surprise actions against the enemy's lines of communication can yield high devidends.

A fundamental part of guerrilla tactics is the manner of treating inhabitants of the region. The treatment of the enemy is also important. Toward the enemy the rule to follow should be one of absolute ruthlessness at the time of attack, absolute implacability toward all contemptible persons engaging in betrayals and assassinations; but the greatest possible clemency toward soldiers who in fighting are fulfilling, or believe they are fulfilling, their military duty. It is a good rule, so long as there are no important bases of operations or impregnable positions, not to take prisoners. Survivors should be left at liberty; wounded enemy should be given all care possible at the time of the action. Conduct toward the civilian populace should be governed by great respect for their traditions and customs, in order to demonstrate effectively the moral superiority of the guerrilla soldiers over their opponents. Except in special circumstances, there should be no executions without giving the accused person an opportunity to clear himself of the charges.

Favorable Terrain

> The rougher and more inaccessible the terrain the more confident the guerrilla is. From almost impenetrable refuge he goes out constantly to harass and fight the enemy. The radius of operations depends upon the situation but safe lines of internal communication must be maintained.

Guerrilla warfare will not always be waged in terrain favorable for the application of its tactics. However, when the guerrilla force is established in regions difficult of access, in wild and rough country, with steep mountains, or impassable deserts or marshes, the terrain is favorable. The general tactics will always tend to be the same and based on the fundamental postulates of guerrilla warfare.[7]

The guerrilla force should fight from the first moment it has assured its survival. It must go out constantly from its place of refuge to fight. Its mobility does not have to be so great as when the terrain is unfavorable. It must adapt itself to the circumstances of the enemy but does not need to have the extensive mobility required in regions where the enemy can quickly concentrate large numbers of men. Nor are night operations so important in this kind of fighting, because operations and especially movement of forces often are possible by day, always subject to the enemy's vigilance on the ground and in the air. Also, the actions can last much longer in the mountains with smaller forces used, and very probably the enemy can be prevented from bringing reinforcements to the scene of the fighting. Vigilance over possible routes of access is, of course, an axiom that must never be forgotten by the guerrilla, but his aggressiveness (because of the difficulties of preventing the enemy from receiving reinforcements) can be even greater. It is possible to come closer to the enemy, to harass and fight him more directly and for a longer time, always subject to circumstances such as, for example, the quantity of equipment available.

Warfare in favorable terrain, and particularly in the mountains, in opposition to so many advantages, includes the disadvantage that it is difficult, because of the considerable precautions taken by the enemy in these regions, to seize in a single operation a considerable quantity of arms and equipment. (The guerrilla soldier must never forget that the enemy should be the source of supply for arms and equipment.) However, much more rapidly than in unfavorable terrain, the guerrilla force can become firmly established and form a center for carrying on a war of positions. It forms installations protected from aviation or long-range artillery, creates necessary small industries and activities such as hospitals, education and training centers and other essentials like warehouses and radio broadcasting stations.

The radius of operations of a guerrilla force of this type can be as wide as the conditions or operations of adjacent guerrilla forces permit. Everything depends upon the time required to proceed from a place of operations to a place of safety. This means assuming and calculating that marches will be made at night, that it is not possible to operate farther than five or six hours' march from the point of minimum safety. Of course, small guerrilla bands can radiate from the areas of safety weakening the territory.

Weapons preferred for this type of warfare are those of long range with little expenditure of ammunitions, with support from automatic and semiautomatic weapons. One of the weapons most recommended is the Garand M1 rifle, although it must be used by people with some experience, because it uses too much ammunition. Semi-heavy weapons such as machine guns mounted on tripods can be used in favorable terrain with a greater margin of safety for the weapons and

[7] FM 31-21, 14, states: "The most secure terrain sometimes cannot be used as the base area because guerrilla forces should be within striking distance of profitable targets." The difference in thought stems from the U. S. concept of using guerrillas in support of conventional forces, whereas Guevara is interested in fomenting revolution.

their users, but they should always be used as defensive weapons and not for attack.

An ideal armament for a guerrilla force of 25 men would be 10 to 15 ordinary manually operated rifles, some 10 automatic weapons divided between Garand rifles and small portable machine guns, counting on the support of automatic weapons that are light and easily transported such as U. S. Browning machine guns and the more modern Belgian FAL and M14. Among the small portable machine guns, those of 9mm are preferable, as greater quantities of ammunition can be carried and their more simple construction the better facilitates changing replacement parts. All of this should be adapted to the armament of the enemy because we are going to use enemy equipment when it falls into our hands. The enemy will find that heavy armament is practically useless: the aviation can see nothing and serves no purpose, and tanks and artillery can accomplish little due to difficulty of advancing in these regions.

Supply is very important. In general, regions that are difficult of access have for that very reason a difficult supply problem because farmers, and therefore supplies of farm products, are lacking. It is necessary to have stable supply lines and a minimum of goods always on hand to provide against any unfavorable contingency.

In such areas of operations, possibilities for sabotage on a large scale are lacking because there are few constructions, few telephone lines, aqueducts or other facilities that can be damaged by direct action.

To assure supplies, it is important to have animals. For rough terrain mules are best. Adequate pastures must be available for feeding them. These animals can travel over extremely rough and difficult ground where other animals cannot. In the most difficult conditions, resort must be had to transport by men. A man can carry a load of 25 kilograms [say 55 pounds] for many hours a day and for many days.

Lines of communication with the exterior must have a number of intermediate points in the hands of persons who can be trusted. Here products can be stored and persons acting as intermediaries can be concealed at certain times. In addition, internal lines of communication must be established, depending on the degree of development reached by the guerrilla force. In some areas of operations during the last Cuban war, telephone lines many kilometers long were provided and roads were built. There was always an adequate messenger service to cover all areas in the shortest time possible.

Unfavorable Terrain

> In heavily populated and built-up areas, guerrilla groups must be kept small. Night movement is SOP. Stealth, secrecy and surprise are commonplace. Security is difficult and guerrillas use propaganda to sway the masses to their side of the conflict.

Unfavorable regions are those without woods or other cover, that are not very rough, and have many roads or other means of communication. To wage war in this type of terrain all the fundamental features of guerrilla warfare are used. However, the manner of using them is changed. There is a change, we can say, in the quantity but not in the quality of these features. For example, mobility of guerrillas in such terrain should be exceptional; attacks should preferably take place at night and should be extremely rapid, almost explosive; withdrawals should be not only rapid but should be toward points different from the original location, as far as possible from the action. Always remember that it is not possible to find a protected place inaccessible to the repressive forces.

Men can march between 30 and 50 kilometers [say 18 to 30 miles] during the hours of night and into the early hours of daylight. However, the area of operation cannot be completely controlled, and there is danger that the inhabitants will see and hear the guerrillas pass and will report to the persecuting army. It is always prefer-

able in such cases to act at night, although this rule will not always hold true, as there will be times when the hours of dawn will be better. The enemy should never be allowed to become accustomed to certain ways of fighting: the places, the time, and the manner of carrying out operations should be varied constantly.

Explosions of mines in roads and the destruction of bridges are very important methods to be taken into account. There can be less aggressiveness with regard to continuing attacks, but while they are occurring they can be very violent. Other weapons such as mines and shotguns can be used. The shotgun is a terrifying weapon for use against the usually uncovered vehicles carrying troops and also against unprotected vehicles (buses and similar vehicles).

The number of men in a guerrilla group of this kind should not be greater than 10 or 15. It is of great importance to consider always the limitations with respect to the number in a single combat group. Ten, 12 or 15 men can be concealed in some location and at the same time offer strong resistance to the enemy and support one another. On the other hand, four or five would be perhaps too few. However, if the number exceeds 10, the possibilities are much greater that the enemy may localize them in their original camp or on some march.

It should be remembered that the rate of marching of a guerrilla force is equal to the rate of its slowest man. It is more difficult to find uniformity of marching rate among 20, 30 or 40 men, than among 10. Also, the guerrilla of the plains should be a good runner. It is in the plains that the practice of striking and fleeing should be used to the maximum. Guerrillas of the plains have the great disadvantage that they can be rapidly surrounded and have no safe place where they can put up a firm resistance. For these reasons they must live for long periods under conditions of absolute secrecy, because they can trust only those whose loyalty has been completely proved. Repressions by the enemy are generally violent and brutal, reaching not only heads of families but also women and children. In many instances, pressure over persons that are not very strong-willed can cause them to give information as to the location of guerrilla forces and how they are operating, permitting immediate encirclement with consequences that are always disagreeable, if not mortal.

One of the weapons that can be used by a guerrilla force—a weapon of heavy type that is of great value because of easy handling and transport—is the bazooka (the antitank grenade for rifles can replace it). It will of course be taken from the enemy. It is ideal for firing on either armored or unarmored vehicles carrying troops, and for quickly overcoming small posts with reduced effort. However, only three shells can be carried by each man.

Naturally, none of the heavy weapons taken from the enemy must be wasted. However, there are weapons, such as the tripod-mounted machine guns and heavy machine guns of caliber .50, which, if taken, can be used temporarily with the thought of abandoning them eventually. There should be no combat, under the unfavorable conditions we are describing, to defend a heavy machine gun or some other weapon of this type. The weapon should be used only until the tactical moment arrives when it is advisable to abandon it. In our war of liberation, abandoning a weapon constituted a serious crime for which no excuse was permitted other than the one just pointed out; we specified this as the only situation that would not bring punishment. The ideal weapon for the guerrilla in unfavorable terrain is the rapid-fire personal weapon.

The very characteristics of easy access usually make the region populous, and the area usually includes a farming population. This greatly facilitates the problem of supply. By dealing with people who can be trusted, among those who make contact with establishments distributing provisions to the inhabitants, it is quite possible to maintain a guerrilla force without devoting time or much money to long and dangerous lines of supply. It should be emphasized, in this connection, that the smaller the number of men the easier it will be to supply them. Essential supplies such as hammocks, blankets, waterproof cloth, mosquito netting, shoes, medicines, and food are found directly in the region. They are objects of daily use by the inhabitants.

Communications will be greatly facilitated by being able to count on a greater number of men and many more ways of transmission. However, there will be much more difficulty as regards insuring that a message will reach a distant point, because trust must be placed in a number of persons. Thus, there will be danger of the eventual capture of one of the messengers constantly crossing enemy territory. If the messages are not very important they may be transmitted orally; if they are important they should be transmitted in writing and in code, because experience shows that oral transmission from person to person can completely distort any message sent in this way.

For the reasons pointed out, in addition to being more difficult, industrial activities by guerrillas become less important. It will not be possible to make shoe soles or weapons. Activities of this kind will practically be limited to small well-concealed workshops for reloading cartridges, making some types of mines and detonating devices; in short, what is appropriate for the mo-

ment. On the other hand, it is possible to count on all the workshops of friendly inhabitants for the kinds of work that are necessary.

This brings us to two logical conclusions arising from what has been said. One is that conditions for guerrilla warfare are the reverse of those that favor the productive development of the region in question. All the favorable circumstances for production, all of the facilities to make human life easier, are unfavorable for the guerrilla forces; the more facilities there are for the life of the inhabitants, the more uncertain, the more difficult and nomadic will be the life of the guerrilla. The title of this section is indeed "Warfare in Unfavorable Terrain" because all that is favorable to human life, with accompanying means of communication, urban or semi-urban centers, large concentrations of people, and ground easily worked by machinery places the guerrilla at a disadvantage.

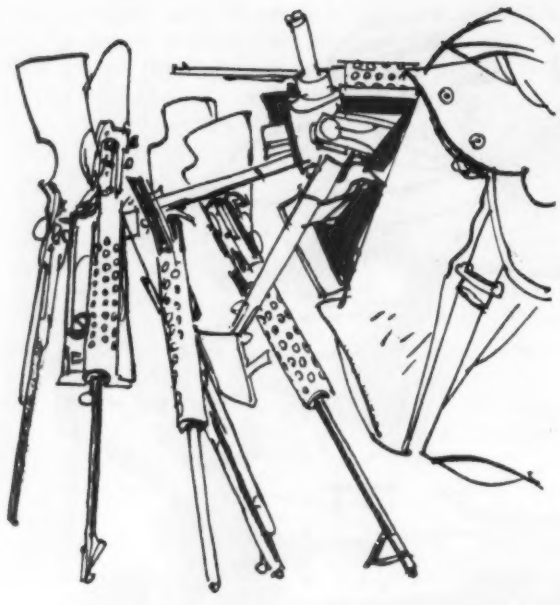
The second conclusion is that, if guerrilla activities must necessarily include important work among the masses, this work is much more important in unfavorable regions, in regions where a single enemy attack can result in catastrophe. In such regions there must be continual work in propaganda, continual effort to unite the workers, the peasants, and other social classes in the region, in order to arrive at a complete homogeneity of the internal front in favor of the guerrilla forces. This work among the people, this continual activity as regards relations between the guerrilla forces and the inhabitants of the region, must also take into account individual cases of recalcitrant enemies and eliminate such enemies without leniency when they constitute a danger. In such matters, guerrillas must be ruthless. There can be no enemies in dangerous places within the area of operations.

Suburban Areas

> Guerrilla forces in suburban areas must not operate independently of other forces in the conflict but must gear their operations to the objectives and plans of other forces in other areas. Forces must be small, must be trained in sabotage, and must maintain extremely severe discipline.

When the guerrilla fight can be directed at harassing cities, and guerrilla forces are able to penetrate and establish themselves with a certain degree of security in the surrounding countryside, it will be necessary to give these forces special instruction or, we should say, organization.

It must be pointed out that a suburban guerrilla force cannot be formed by its own efforts. It can be formed only after the creation of certain conditions necessary for its existence. This indicates that a suburban guerrilla force will be di-



rectly under the orders of leaders located in other areas. Therefore, such a force does not carry out independent actions, except in accordance with previously established strategic plans. The action must support activities of larger groups located in another area. This is a smaller scale of operations than used by other types of guerrilla forces but it will definitely contribute to the success of some particular tactical objectives. A suburban guerrilla force will not be able to choose between sabotage of telephone services, or other forms of sabotage, or surprising a patrol of soldiers on a distant road—it will do exactly what it is told to do. If it is called upon to cut or damage telephone lines, electric power cables, sewers, railways, or aqueducts, it will confine itself to the performance of these duties to the best of its ability.

The numerical strength of such a force should not exceed four or five men. Limitation to this number is important because the surburban guerrilla force must be regarded as acting in an area that is exceptionally unfavorable; the vigilance of the enemy is much greater and the possibilities of reprisals and of betrayals increase enormously. A suburban guerrilla force is at a disadvantage because it is unable to withdraw very far from the scene of operations. Nevertheless some withdrawal, to remain completely concealed during the day, should be combined with rapidity of movement and action. Such a force is especially suited for night actions without changing its manner of operating until the insurrection has progressed to the point of besieging the city and the inhabitants can participate as active combatants.

Essential qualities of guerrillas of this type are discipline—perhaps to a greater degree than in the case of other guerrillas—and discretion. They cannot count on more than two or three friendly houses for shelter and food. It is almost certain that seizure under these conditions means death. Their weapons will not be the same as those of other guerrillas, and will consist of weapons for personal defense that do not prevent rapid flight and safe concealment. The best weapons are a carbine, one or two sawed-off shotguns and pistols for the other members of the group.

Armed attacks should never be made except by surprise on one or two members of the enemy troops or of the enemy's secret service. The action must be concentrated on the sabotage ordered.

Ample supplies of equipment and tools should be provided for the work. There should be appropriate saws, large quantities of dynamite, picks and spades, and apparatus for tearing up railway lines. In short, adequate mechanical equipment is necessary for all that is to be done. The equipment should be concealed in safe places which can be easily reached by those who will use it.

If there is more than one guerrilla force, they will be under the command of a single leader who will give orders for the necessary work through trusted persons engaged in civil occupations. In certain instances, the guerrillas can continue their peaceful occupations. This is usually very difficult because the suburban guerrilla force is a group of men performing unlawful acts and operating under the extremely unfavorable conditions described.

There has been lack of appreciation of the value of guerrilla fighting in the suburbs, but it is, in fact, very important. Appropriate operations of this kind, extended over a wide area, can almost completely paralyze the commercial and industrial life of the area and cause disturbance and distress to the entire population. This makes the people anxious for violent developments to bring an end to their troubles. If thought is given at the beginning of the war to future possibilities, specialists can be organized for suburban fighting. Then action can be carried out much more rapidly and with a saving for the nation in lives and precious time.

Continued next month with

Bush Warfare

The Guerrilla as a Fighter
The Organization for Bush Warfare
Bush Combat

Management's Self-Inflicted Wounds

Lt. Col. CHARLES F. AUSTIN

When the "first installment" of wounds appeared in the April 1959 issue the reaction was instantaneous. The mail was heavy, and altogether favorable. Many of the letters were official ones, requesting permission to reproduce the article and to distribute it, as one letter said, "to every commander, manager and leader" within the command. Other periodicals have reproduced it, including the Pakistan Army Artillery Journal. The Veterans Administration has distributed it to every individual who holds a supervisory position in that large, far-flung organization. Pleased by the response to the article, Colonel Austin has "diagnosed" several more "wounds" and plans to incorporate all of them into a book he is writing on the subject of executive self-appraisal. Here are some of them.

—THE EDITORS

IF I were asked to identify the common quality shared by each of us which has caused the widespread response to "Management's Self-Inflicted Wounds" [ARMY, April 1959], I would say it is this: Basically, each of us is a "good" person who, becoming aware of his own shortcomings, experiences an honest desire to overcome them—or to at least reduce the number of sins he commits against the commandments of human behavior. Also, there is much evidence to indicate we can improve more by concentrating on avoiding doing wrong things than by doing right things. Accordingly, I list here some more wounds that can be avoided by concentrating on *not* inflicting them on yourself.

However, if the difficult function of self-diagnosis is to be effective, we must take some preparatory steps. Since we cannot use the conventional psychiatrist's couch, let's repeat in the next paragraph from the original article—and reflect on it preferably in a quiet, calm setting as you seek and probe for Wounds:

"Let's take a look at each of these, and as we do, ask yourself if you bear any of these wounds. This will require careful examination because you are now your own doctor, so to speak. So look in a mirror. And don't do it the way the mountaineer and his wife did the first time they saw a mirror. He found it in the woods, looked in it and remarked, 'Well, if it isn't a picture of my old dad. I never knew he had a picture took.' His wife saw him hide the mirror under the mattress. She took it out later, looked in it and remarked, 'So that's the hussy he's been playing

around with'! Don't do it that way. When you look in the mirror, look at *yourself!* Here we go!"

The No-Decision Boss

This chap needs very little description. He just won't (or can't) arrive at a decision, no matter how you press him. Or he delays his decision so long that time eliminates all alternatives but one. I asked the subordinates of a senior executive who retired not long ago for a profile on their boss. One thing stood out: "On decision after decision, he delayed so long that there was only one alternative left. The calendar made his decision."

Now I'm not saying decision-making is easy, or that some decisions shouldn't be delayed. All I am asking is, How is *your* decision-making these days?

The Written Disapproval

This one will bring your blood to boiling point in a hurry. Remember the last time you sent your boss a carefully prepared written proposal on which you had spent many hours or days of thought and work? When next you saw it was when you found it in your IN basket, accompanied by a short, written disapproval. Relive, if you can, the emotions you experienced at that moment. You were simultaneously hurt and furious. Hurt that your boss was not even courteous enough to call you in and discuss the matter before he made his decision; furious because he took the weasel way out.

Slow-burning subordinate

Now for the acid-test question: When was the last time *you* were the guy without the guts, the boss who penned the written disapproval? You couldn't afford the time to discuss it with your subordinate? Brother, there isn't a psychologist who wouldn't say you couldn't afford *not* to *take* the time, if you valued the future services of that subordinate!

The Policy Manager

You know this type. He goes around promulgating "policies" all over the place—spoken and recorded, typed and hand-written. He thinks he is insuring good management when actually he is insuring that his subordinates will not be allowed to *think* in solving his problems. Recently the president of a large corporation said proudly to a group of businessmen and government students: "No problem can come up to one of our employees that he cannot find our policy on it in our Policy Book." I couldn't refrain from breaking in on the intercom with, "I hope it's a loose-leaf book, sir."

A most glaring example is the Pentagon "position" which each organizational element takes on controversial matters. When a new officer joins a staff section, regardless of rank, his "indoctrination" consists of thoroughly implanting Our Position into his brain. He is told what Our Position is, how to defend it, how to attack and counterattack to preserve its integrity. The new officer is not invited to evaluate Our Position. If he does so voluntarily he'll probably wind up in trouble.

You've probably suffered under such a system and wondered how to keep honest. Are your subordinates working for a Policy Manager now? Stated differently, are *your* people using brains or policy?

The Loneliness of Command

I've been unable to determine who first used the expression "loneliness of command," but I wish he had defined it in such a way as to prevent the distortion of its meaning through countless generations of military progression and business enterprises. I'm sure it originated among soldiers, and I am also sure it was meant to describe the necessary (and somewhat lonely) lot of the commander who, in the final analysis, must personally make the important decisions and is held responsible for them. We've all heard that a commander is responsible for what his unit does or fails to do. Certainly there is nothing wrong with this description. However, today's interpretation seems to be that the boss (manager, leader, commander) must take overt and covert steps to seal himself

off from his subordinates—among other reasons, to prevent their taking advantage of him. He takes these steps in complete or feigned ignorance of the recognized psychological and cultural fact that the mere status of being a boss creates an invisible wall between him and his subordinates which is as impenetrable as reinforced concrete. A parable may help.

Not so long ago Colonel Able was serving in the Pentagon along with Colonels Bravo and Charlie, both of them his long-time friends. Bravo had been Able's immediate subordinate during an earlier tour. During the course of the current Pentagon hitch the three saw one another often and continued their long-standing first-name friendship. Then one day Colonels Bravo and Charlie were promoted to brigadier general. Able congratulated them, but became quite puzzled during the weeks that followed by their treatment of their old friend. Bravo and Charlie were very aloof and cool toward him. They no longer called him by his first name. Instead, they used his last name and at times in groups seemed to be rather unaware of his presence. Instead of realizing that the star on their shoulders had created an invisible wall around them, Bravo and Charlie had set about materializing that wall, and thickening and reinforcing it.

Tear down that invisible wall

You have been playing the role of Colonel Able and are angry, aren't you, even if you feel the generals may not have been typical? Let's leave the generals with their problems and look at yours. What are *you* doing to tear down that invisible wall between you and your subordinates?

Recently during a talk on this subject to a group of senior civilian executives, one of them could hardly wait to challenge me during the discussion period with the question, "You mean you feel I should fraternize with people under me in my organization?" His question communicated his feelings so vividly that instead of responding I got him into an argument with a few fellow delegates, like himself chief executives of their agencies. These men had seen the light, and tried to convince the questioner that his agency would be more effective if he would occasionally circulate among his people, getting to know them and showing a sincere interest in them. I won't say they converted him, but I'll bet he has done a lot of thinking about the matter since then. How about giving it a little thought yourself?

The "status" problem will probably always be with us, but merely recognizing it is progress. Some years ago a research study examined status-seeking in three types of organizations: business, military and educational (the study included behavior of wives). The results may or may not surprise you. Listing from "most status conscious" to "least status conscious," the study showed: educational institutions, business organizations, military agencies.

Brains or policy?

The Deputy Complex

This manager is best described by the expression, "All I need is a deputy." I'm sure you get the idea, but I'm talking about the boss who feels he just can't work without a No. 2 man to run the show for him (or on whom to unload his problems, or to hold responsible, or to do his thinking for him). The practice is very prevalent, and the reasons behind it are not easy to define. Recently I asked a profound student of executive behavior about it, and his opinion was that it stemmed from insecurity on the part of the boss—a fear that he was not competent to do the job—and a desire to unload his problems on a principal assistant and to harass him and hold him responsible for their solution.

Regardless of the reason for this practice, it exists, and is detrimental to the over-all effectiveness of an organization. The department or division chiefs are placed in situations of conflicting loyalties. They wonder whether they are working for the boss or for his No. 2 man, and the executive skills of the boss in the way of supervision and development are not available to his division chiefs. The president of a well-known large and progressive corporation was distinguished by the fact that he used no No. 2 man to help him direct or supervise the 14 vice presidents and staff chiefs who reported to him. I asked him why he didn't use a No. 2 man. He replied: "I would not want anyone diluting the very fine supervision that I as president give them four hours a day. I also play

Can your subordinate see you?

golf and travel quite a bit. You see, I give them a job to do and then I let them do it."

You'd give your right arm to work for such a boss. So would your subordinates, if you're the typical executive. You don't really *need* a deputy, now, do you? (And if you think you've concealed your Wound by having an "executive officer" or an "administrative assistant" or "assistant to" instead of a deputy, you are only fooling yourself!)

The Acting Corporal Concept

Many a Self-Inflicted Wound is incurred by a manager or a commander through the very fact that he is in an "old" organization, such as the military ones, wherein practices once adopted are seldom questioned. I call this the Acting Corporal concept with the same healthy contempt that the term connotes when used by soldiers. It is the idea or belief that *someone* has to be in charge when the boss is gone; and that that someone *must be* the senior in military or civilian rank, regardless of his capabilities or the demands or unique aspects of the situation. This practice is rarely required by the regulation (except where true command in its military sense is concerned), but it is done by default, only because it has always been the custom to do so. It does much harm and almost no good. It creates the Crown Prince or Heir Apparent situation, breeding discouragement and resentment among the day-to-day peers of the Acting Corporal. They resent both the Acting Corporal *and* the boss who gave him the title. And rightly so.

Management by default

The manager who uses this practice when it is not dictated by command regulations is a defaulter. He has amassed liabilities when he could have garnered assets. I know a large corporation which requires every organizational element to have an Acting Chief whenever the boss is away for a day or more. But is he the Acting Corporal (the senior subordinate)? Certainly not! The peer subordinates (for example, five division chiefs in a department) take turns acting as chief, on a roster basis. This corporation has thereby created a really effective built-in executive development program. The effectiveness of the unit could not be higher, free as it is of the tensions, jealousies and other human reactions generated by the Acting Corporal concept.

You have been involved in an Acting Corporal situation many times, and disliked it heartily (except, of course, when *you* were the Corporal!) Why, then, are you using the system in your own organization right now?

The Backfiring Reprimand

I think you know what I mean by this one. I'm talking about the reprimand that does more harm than good. Its net effect is negative rather than positive.

A case in point. A paper mill once produced an entire carload of expensive banknote paper which was returned by the customer as unsatisfactory. It *was* unsatisfactory. Someone had goofed, and analysis revealed that in one way or another most of the departments had contributed to the flub. I know the man who was manager at the time. He said all personnel, from himself on down, were stunned and ashamed. Every hand, including the manager, came to the mill voluntarily the next Saturday. Together they worked out a system of controls which would positively prevent a recurrence of such an incident. They worked for no pay that day, but they went home feeling they had learned a costly lesson, and resolved to do better in the future.

Several days later the president, whose office was a hundred miles away, made a special trip to the mill, called a mass meeting, and administered a severe tongue-lashing to one and all, the manager included. I won't insult your intelligence by describing the reactions of the workers. The president's parentage was questioned by everyone, and from that day forward he was unwelcome at that mill.

Here's another. A very conscientious major, with high personal and professional standards, committed an error in judgment while preparing for an inspection by a higher headquarters. When the inspection took place his mistake placed his unit in a bad light. Members of his outfit, his peers and subordinates who respected him highly, and the major himself became immediately aware of the error. This awareness in itself was more of a reprimand than any that could possibly have been administered by a superior.

Weeks after the incident, a written reprimand came through the mail to the major and copies were placed in his 201 file. He was furious, and justifiably so. So were his peers and subordinates. The officer who signed that reprimand, and the major's immediate superior who recommended it, both felt good about it. They had certainly taught *him* a lesson. Like hell they had! All they accomplished was to lose the respect and loyalty of a fine officer, his peers and subordinates.

Pretty stupid, weren't they? By the way, how about analyzing the last five reprimands *you* passed out? Did they benefit the guilty *and* his unit? How do you *know?*

The Boss Who Likes Bootlicking

Now we come to the boss who intimates, in one way or another, by acts of omission or commission, or both, that he expects his subordinates to lick his boots. This is something which is never talked about openly, but often is discussed in low voices at cocktail or bridge parties, in car pools and in rest rooms (after carefully looking under all doors for the boss or one of his bootlickers). It is an unpleasant subject, but I'm sure you agree it is a very important one, and it is integral to any examination of the organizational environment in which we find ourselves.

Do you really need a deputy?

The practice of bootlicking is age-old. (There are synonyms for the words that are too vulgar to use here; if you don't know them, just ask around.) In our day and age it doesn't take much observation to pinpoint the sycophants and bootlickers hard at work in any group, military and civilian. They are well known to and identified by their peers, and are regarded with utmost contempt by those who do not stoop to the practice. The finger of scorn is pointed at them at every opportunity.

You may be reluctant to admit it, but the inescapable truth is this: if bootlicking exists or is allowed to exist in any outfit, it is the fault of one man: the boss (sometimes one woman—the wife of the boss). This may cause you to squirm a bit, but it absolutely true. You don't believe that? I'll prove it.

Most of us have either seen or read or heard about Rod Serling's TV drama, "Patterns," which depicts behavior of top management officials (and their wives) in a business firm. The crisis occurs when the autocratic president succeeds in riding to death a senior vice president who has had the guts to oppose him at times and to place loyalty to the organization above loyalty to the president.

At a very dramatic staff meeting, the vice president suffers a fatal heart attack, brought on by this merciless public scourging by the president. In the dramatic moments which follow, the man who had previously been selected to succeed the vice president, before the president with his human erosion tactics can break or kill him, confronts the president with a showdown. He accuses the president of hating the dead man because he represented his (the president's) conscience, and says, "It's a rotten thing to lick a man's boots, but it's a lot worse to be a boss who requires his boots to be licked." If you and I will think of ourselves for a while as subordinates, rather than bosses, we will have not the slightest reservation in accepting the stark truth of this statement.

The pattern is set by the boss

It is also true that bootlicking, like parochialism, will exist to a certain degree in any organization unless there is a continuing campaign against it. In this campaign the boss must be the commander in chief. To use Mr. Serling's well-chosen word, the "Patterns" in the organization are set by the behavior of the top boss. Human nature, with all its weaknesses, plus the law of averages which allows us to predict human behavior among groups, causes the initial practice

of bootlicking in any organization. The arrival of each new boss causes it to rear its ugly head, notwithstanding the fact (if fact it were) that the last prior boss had successfully attacked and stamped out the evil. We can assign the original sin to the frailties of human nature, but from that point on the sin cloaks and covers the boss and becomes his sole property. The responsibility for what happens after that is his, and his alone.

The most tragic aspect of bootlicking is its vicious, contagious nature. If it is allowed to thrive, it becomes the common assumption and belief that the boss likes and desires it; that it is a necessary (though revolting) thing one must do if he is to get along or advance in the organization. It becomes a necessary evil and its erosive natures wears away the otherwise impregnable standard of conduct of many a man.

A dramatic case in point is the payola investigation during 1959-60. Many a record salesman or sales manager testified that he was merely meeting competition when he offered payola to disc jockeys; that he had to do it to meet sales quotas set by his boss. As a student of human behavior in organizations, I felt a great deal of compassion for these men. I do not condone their behavior, but we can clearly see that they found themselves in circumstances where the pressures were so great they diluted their intellectual and moral integrity in order to hold their jobs.

The man who finds himself in an organization where bootlicking is condoned by the top boss (which almost forces intermediate bosses to condone it) is in a most difficult position of conflict. Even though he despises the practice, he succumbs to it. As the psychologists or sociologists say, he adjusts to the norm. He is like a fly caught in a spider's web. He feels his survival requires bootlicking, and he lives with it. He sleeps uncomfortably, but he sleeps.

"Acting Jack's" a hated man

By now I hope you have refreshed and renewed your contempt for the despicable practice of bootlicking—or sycophancy, if you prefer a euphemism. But as we have gone along you and I have thought of ourselves primarily as subordinates, rather than as bosses. Now let us look into the mirror and ask ourselves some questions most difficult to answer: Am I a boss whose boots must be licked? Am I one whose subordinates feel they must resort to sycophancy in order to get ahead in my outfit? How can I distinguish common courtesy from bootlicking? How can I answer these questions? Can my wife answer them for me, or will she have the same trouble in asking and answering the same questions concerning herself and her relationships with the wives of my subordinates?

Is there a cure for bootlicking?

I wish there were a single, magic answer, but there is none. Part of the difficulty lies in the fact that we are human. We like to think that our subordinates honor, respect and admire us because we display exceptional attributes of professional and human behavior. This is understandable, for we must have *some*thing, or we wouldn't get to be bosses. And of course there is enough fact in this analysis to defend it.

Here is a formula which may prove helpful. You have probably read and heard of the practice of empathy, which is defined as "the power of projecting one's personality into, and so fully understanding, the object of contemplation." We have already agreed that bootlicking is recognized instantly by the guilty's peers. Capitalize, then, on this fact and by practicing empathy, assume the role of the "typical" subordinate who reports to you. Examine the actions of his peers as they relate to their boss—you. Examine the compliments, courtesies, favors, gifts and other evidences of these relationships through the eyes of one of your subordinates, and determine what you can see. This will not be easy, but to the extent that you can do it effectively, to this degree will you be able to differentiate between honest praise and flattery, to distinguish favors which represent common courtesy from those which are nothing but emblems of sycophancy.

One other method will prove valuable to a boss who in point of time is just taking over his new job. That method is much more direct and, if

Only you can lick bootlicking

carefully carried out, can be very effective. It is simply this: when you take over, perhaps at your first meeting with your principal subordinates, state in plain and simple language that you are *not* a boss whose boots must be licked; that you share their contempt and scorn for the practice; that it is *not* required for promotion or advancement; that instead it will be condemned.

Now if you do this, you must be careful not to acquire one Self-Inflicted Wound we have already mentioned: the unnecessary loneliness of command. You must avoid this, and you can do it. You should speak to your wife too, and she for herself. Tailor your remarks to your audience, for the words you *use* are not what counts; what counts are the words your listeners hear and *understand*. From then on, you're on your own.

Lick Those Wounds

A final word of caution and counsel. If you have taken our examination seriously, by now you probably have a strong feeling of guilt. You feel you are figuratively covered with Wounds. That is to be expected. A reader does not have the same opportunity that audiences have after a prepared talk is completed, for the lecture is followed by a discussion period. During this discussion the healing process is begun and constructive, positive plans for the future partially counterbalance the weight of this feeling of guilt.

Here is a process, with a similar purpose, which I recommend. Read both instalments of this article and periodically use them as a guide for conducting a self-analysis of your executive behavior. Set up a Sins Per Wound chart, with the names of your individual Wounds running along the bottom, and the Number of Sins Per Wound running along the left vertical side. Then, periodically chart your performance over a "remember-able" length of time.

Don't get discouraged. None of us will ever be a perfect boss. All you can hope for is to be "trending" in the proper direction; that is, incurring fewer Wounds per time-period. After you have charted your Sins Per Wound, draw a trend line; then examine it to see in what direction you are heading. If the trend is toward fewer Wounds, pat yourself on the back and resolve to do even better. If your trend line points in the wrong direction, do some serious soul-searching and make every possible effort to improve. If you still have trouble, do as one executive (he wears more than one star) did who read the first instalment. He gave it to his immediate subordinates and requested that they inform their boss of his shortcomings. He really did, and they complied.

Don't murder the 'murder board'

If you use the last system, don't do as the commandant of one service school did. Newly arrived, he planned a highly effective assumption-of-command speech to all subordinates and students. Wanting to do well, he asked for the faculty member who was most highly regarded, by peers and students alike, to criticize a dry run of his talk. The faculty member was directed by the commandant to be extremely critical, to truly nitpick it for content, delivery, gestures, tone of voice, and so on.

The faculty member did as he was directed, but that proved a fatal mistake. He gave the commandant a lot of honest feedback, which consisted of a great deal of constructive, sincere criticism of his oratorical effort. Shortly after that (I understand it was the very next day), the man was suddenly and unexpectedly transferred far, far from the school where he had earned such an outstanding reputation as an instructor.

You can draw your own conclusions from this incident. Mine would not get past the editors, so they are best left unsaid. I will say that if you haven't reached that stage of executive development where you can benefit from criticisms by your subordinates (tacit or implied, spoken or silent), you are not a mature executive. I sincerely believe, however, that there is not one in a hundred of us who does not in his heart truly want to improve as an executive. Let's pitch in and lick those Wounds.

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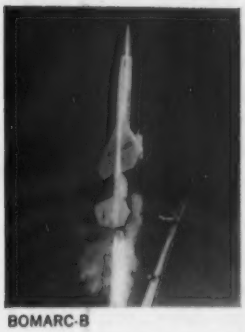

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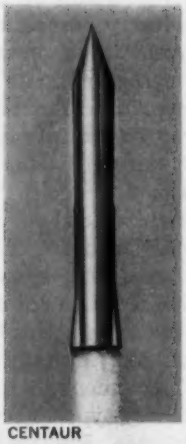

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- POLARIS

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Space technology goes to work for the foot soldier **H. CLAY JOHNSON, JR.**

INERTIAL SURVEYING

IMAGINE a training section of artillerymen trudging through the Apache Gate area at Fort Sill and occasionally driving survey markers into the ground, using the transit and tape method. That was yesterday's guidance system for the ground Army.

The sergeant leading that section could recall going through the same routine many years ago, establishing survey control points or locating gun emplacements in General Patton's day—and trying to catch up with Patton during his exploitation of the Avranches breakout. That section leader and his students may seem to be the neglected men in today's Army, but they surely are not. Advancing technology is bringing forth an array of concepts and equipment which will enable them to keep pace with tomorrow's fast-moving Army.

Until now, we have managed without rapid methods of surveying. For example, General Patton moved across areas of Europe that were adequately mapped for approximate orientation, and his troops used direct or observed fire for artillery missions. Surveying parties would lag behind the advance, gradually bringing forward the brass markers that established survey control.

Now visualize the plight of tomorrow's artillery commander. Moving rapidly over areas which may be poorly mapped, and armed with weapons of a potency, accuracy and range far greater than Patton's, he will still face problems of effectively massing his fires, delivering unobserved fire, and transmitting target data among his units. To accomplish these missions, survey control must be able to locate observation posts, counterbattery radars, missile launchers, orienting stations, heavy artillery pieces, and many others. When these requirements are coupled with shoot-and-scoot tactics, the need for rapid extension of survey control—far more rapid than transit and tape methods—becomes immediately apparent.

Special purpose survey systems

Under the leadership of the Army's Corps of Engineers, industry is meeting this need through various systems which provide the functions of the old surveying methods with a tremendous increase in speed and flexibility. We will briefly describe a few of these interesting special-purpose systems before turning to the more comprehensive inertial system.

One of these special-purpose systems is the tellurometer (Figure 1), a very accurate continuous-wave radiating system, similar to some types of radar. It measures distance over several kilometers well enough to serve in engineer surveying procedures. Miniaturization has reduced this type of instrument to a size where it can be used for artillery-type survey. Additional components have been developed which permit airborne tellurometer distance measurements between non-line-of-sight stations (Figure 2).

Other instruments have been developed that accurately determine azimuths without consulting the stars or referring to the earth's relatively erratic magnetic field, simply by using an entirely self-contained gyrospopic device which senses the direction of the earth's spin. One such unit is shown in Figure 3. By using these gyro-oriented theodolites for determining azimuth between stations where tellurometer distance measurements are taken, the relative positions of the stations can easily be found. This type of combination requires only a small quantity of equipment at each station, and a communication link between stations. Of course, if an azimuth reference is available, the tellurometer measurements may be used in combination with the standard theodolite, thus

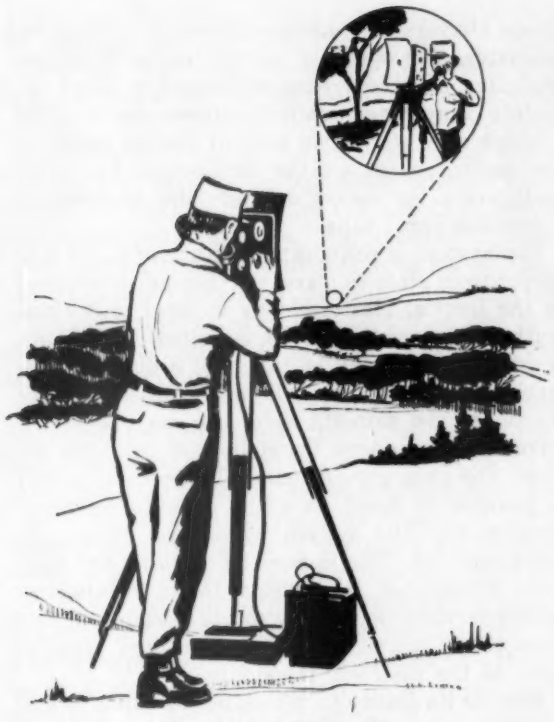


Figure 1. Tellurometer

replacing the more time-consuming tape measurements used in current procedures.

Another concept that is particularly good in fair weather is a short-range electronic positioning system. This utilizes master and slave transmitting stations located on established baselines, small hand-portable receivers being carried forward to listen in on the transmitters. The data recorded by the receivers can be fed into a general-purpose computer which knows the locations of the transmitters and computes the positions of the receivers.

Another method being developed, which furnishes elevation as well as coordinate data, is a system of several automatic tracking theodolites which simultaneously observe the positions of airborne light sources such as flares or aircraft lights. Aided by modern artillery computers, these observations permit calculation of the relative positions of each theodolite. By locating two theodolites at known points (Figure 4) the position of each point then becomes known.

Thus far we have mentioned systems that extend survey control from known points. For situations where no survey control is feasible, a system is being developed which automatically takes a celestial fix (Figure 5). A trailer-mounted computer is pre-programmed with data on several selected stars. It is then put in control of a separate observation device which searches for and locks on to observe a sequence of stars. The resulting observations automatically feed back into the computer, which consults its programmed data and computes the exact position of the observation device. The system determines its own azimuth reference, is not susceptible to electronic jamming, and under a fairly clear sky can determine position within a few meters.

The inertial survey system

You will note that bad weather or enemy jamming may cause difficulty in effectively extending survey control, even when we use the various systems described. Realizing that similar problems have been solved for aircraft, ships, and missiles through the development of self-sufficient inertial systems, General Electric is working on a new and unique surveying system that utilizes inertial principles to meet engineer and artillery needs. This application of Space Age technology, both in concept and in equipment, is intended to provide today's ground Army with a highly accurate, flexible, and mobile system that can withstand any conditions of weather and electronic interference. The inertial surveying system, strikingly similar to today's inertial navigation and guidance systems, will be transported from a known location into the forward areas, visiting each point where coordinate position is desired. The system can remember its position, and can provide coordinates on command. It also includes a continual azimuth reference, and a built-in theodolite which may be used to lay an azimuth at survey points.

The advantages in such a system are immediately obvious. Visualize the plight of the commander of a battalion of medium-range missiles,

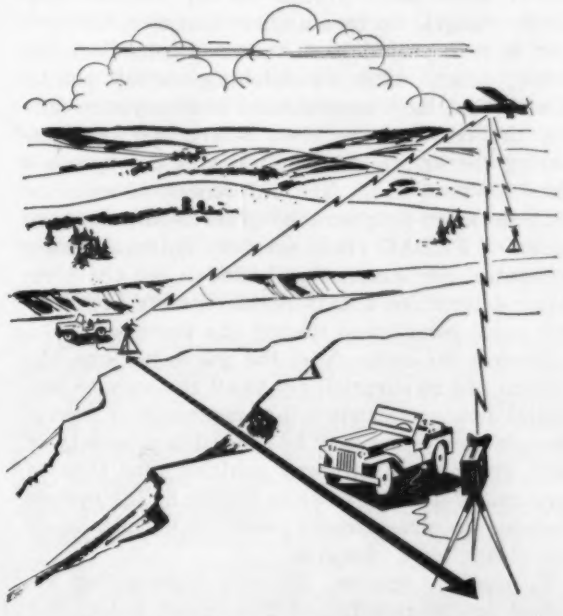


Figure 2. Airborne Tellurometer System

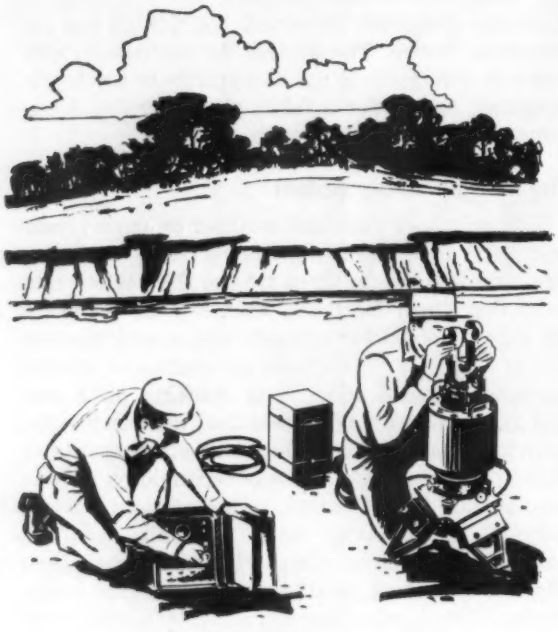


Figure 3. Gyro-oriented Theodolite

whose launchers may have to be moved after one or two fire missions. This battalion will have tremendous flexibility when an inertial surveying system accompanies it; launcher coordinates and an azimuth reference will be immediately available whenever needed, and fires may be maintained as assigned.

Precise control over longer ranges

In addition to its function in open-ended traverse, the inertial system can also be used to assure even more precise survey control over longer ranges. To obtain these features, the system is transported to a known point (even the initial point) after establishing survey points. Errors that have accumulated in the system during the traverse are then determined by comparing the known coordinates with the system's data for that point. The differences, if any, are fed into a pre-programmed general-purpose computer or FADAC (field artillery automatic data computer, see ARMY, April 1960), and the computer determines a data correction for each survey point established during the traverse.

Despite the demands of the job to be done, the system will be surprisingly small and easy to use. Initial demonstrations will be conducted in a jeep, though the system may be carried in a variety of both ground and airborne vehicles. One type of jeep installation is shown in Figure 6. The system includes its own primary power plant, capable of operating in all climates.

To use the system, the only information required is the position of the initial point. For maximum convenience, the system is designed to accept Universal Transverse Mercator (UTM) coordinates. The operator merely inserts these coordinates, and the system subsequently keeps up-to-date coordinates available—these also in UTM —which may be read on a set of display lights on the control panel on the dashboard. For later verification, the survey data are also recorded on a punched paper tape.

The system is self-aligning in azimuth. As it is moved from place to place, the theodolite mounted on the inertial platform may be used to lay azimuths whenever the vehicle is halted. If visibility is good, a sight may be taken on a distant landmark; or by using the collimating lenses in each theodolite the azimuth reference may be transferred to a standard theodolite set near the vehicle. For even greater azimuth accuracy, it will be possible to insert an initial azimuth reference directly into the system instead of relying on self-alignment. This is done by aligning the platform theodolites in relation to an established reference, then electrically rotating the inner portions of the inertial platform as desired with respect to the platform theodolite.

Besides its ability to determine coordinates and azimuth, the system can provide useful elevation data. An inertial measurement of elevation will be included in the initial system, to determine whether it is possible to eliminate the altimetry procedures often used to provide these data.

No Doppler or celestial fixes

Fortunately, the user will not need to become involved in the inner complexities of this externally simple system. However, it is interesting to

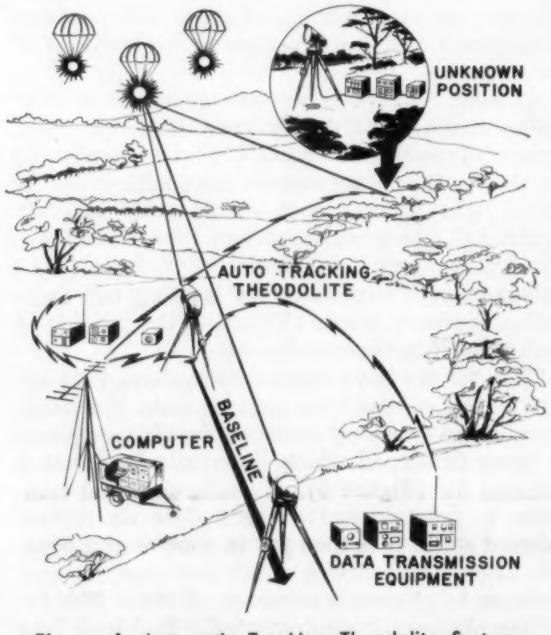


Figure 4. Automatic Tracking Theodolite System

note that the system is similar to other highly complex guidance and navigation systems of the Space Age. The state of inertial technology still requires some sort of external aids for inertial systems that operate over extended periods; usually this aid comes from doppler radar measurements of velocity, or occasional celestial fixes. These are used to minimize the effects of drifts in the inertial equipment. The absence of these aids—obviously not permissible in an all-weather, non-radiating ground survey system—is the only basic difference between the inertial survey system and its Space Age cousins. Otherwise, the concepts and equipment are quite similar.

To obtain continuous measurement of vehicle accelerations and decelerations, the survey system utilizes small accelerometers mounted on a stabilized level platform. These measurements are converted to distance data by means of integrating circuits especially developed by General Electric for this system; this circuitry is so arranged as to require no pre-programming or other adjustment of the computer. Because the effect of gravity requires that the accelerometer platform be kept almost perfectly level, the platform is stabilized by very-high-performance gyroscopes. These technical difficulties were overcome by applying today's technologies and equipments wherever possible, thus assuring maximum reliability and confidence. The accelerometers are of a type which has logged thousands of flying hours; portions of the computer circuits are almost identical to those which have helped guide Polaris successfully on target; the gyroscopes are identical to those which have been tested through many operations to assure their success in one of our newest missiles.

Figure 5. Automatic Position Survey Equipment

A unique feature of the system is the method for eliminating the need for external aids for the inertial measurements. Because the system will be used to locate points on the ground, one detail of data not normally available to an inertial system will be free for the asking: at every survey halt the vehicle's velocity will be zero. The system computes velocity as a step in calculating distance traveled, so naturally the computed velocity should be zero when the vehicle is motionless. Most of the drifts in the system may be determined and compensated for by comparing the computed velocity at a halt with zero. This entire process is automated in the system; the operator merely pushes a button when he stops.

Figure 6. Inertial Surveying System

You will note that the operator has little to do in performing a survey. He turns on the equipment, makes initial adjustments, and inserts initial coordinate data. As he travels from one point to another, he merely presses a button whenever he wishes to record his position. He may read this position datum for immediate use, and lay an azimuth at any point. He need have no concern about electronic jamming or bad weather, so long as he can get to his survey points. His field commander will find a variety of uses for the inertial survey system, most of them related to today's demands for mobility, speed, and accuracy in combat.

Important remaining steps

The steps that remain in developing this system are the final stages of design and fabrication, and the development testing program. The system's initial success will be judged on coordinate and azimuth data; the preliminary proof of its worth will be assessed on the types of data taken over cold, muddy traverses; the final proof must be the system's reliability in the field. There, in the shadow of the launchers, the inertial surveying system will take its place in the continuing growth of our military preparedness.

A New Look at

BATTLEFIELD LOGISTICS

To provide the support you need when you need it

Lt. Col. R. N. ROLLASON

RIGHT at the beginning I'll admit I am prejudiced, for I have had certain training and experience and I know that certain ways will work and that others will not. I have an axe to grind because I have an intense desire to see our country survive and I want to convince you that current trends in logistics will not enable our Army to help it survive.

Even if your primary interests and experience are in tactics, you must agree that the sole purpose of the logistical services is to support the combat arms. Every man, every piece of equipment and every dollar allocated to these services means that much less for the combat arms. We must have a logistical system that provides the things we need to win battles, when, where, and in the kinds and quantities needed. But while this system provides the wherewithal to win battles we cannot permit it to become so cumbersome as to endanger success in battle. It's a vicious circle that leads to no easy or pat solution.

There is, however, a good point of departure. In November 1958 the Army published AR 1-24 (Army Management Doctrine). There is more common sense packed in these four pages than in many a book. Yet I have rarely found a commander, a senior staff officer, or a planner of any grade who is even aware of its existence.

This Army Regulation defines the words *command* and *management,* enumerates the functions and basic principles of management, and prescribes management policies. To my knowledge, every "new" concept for logistical organization and operations proposed during the last several years for the "modernization" of our Army to meet a mobile atomic battlefield situation has not only ignored these principles and policies; in too many instances it has initiated actions directly opposing them. While I intend to demonstrate the truth of this statement to the extent that security permits, anyone familiar with recent proposals will recognize that, at best, these concepts were proposed in ignorance of the management policies I quote from AR 1-24 (I have supplied the italics):

"Assignment of responsibility *and delegation of adequate authority* [will] be made *to the lowest practical level,* with clearly defined lines of authority and responsibility."

"Centralized control of decentralized operations [will] be *limited* to the extent required to—

"(1) Establish priorities of centrally directed programs.

"(2) Allocate *critical* resources.

"(3) Identify and correct basic deficiencies."

"Standardization is desirable to facilitate management, but standardization [will] *not* be carried to the point where it negates the benefits of non-standardization or decentralization."

"Time and effort of those who manage [will] be concentrated upon changes from previously known situations; upon deviations from norms; and upon problems *commensurate with their levels of responsibility.* (This is management by exception.)"

Basic opposing views

Among the "principles" enumerated in AR 1-24 is this one: "*Service to the users* is the primary basis for evaluation of administrative and support services." I assume this is an understatement which really should read "Service to the users is the *only reason for existence* of administrative and support services." With this as a starting point, let's take a quick look at the basic opposing views regarding logistical organization and operations.

There are really only two schools of thought: those who favor the technical services, and those who are against them. In far too many instances adherence to one or the other of these basic positions has become such a phobia that proponents of both sides have forgotten that seldom is anything all black or all white. There are many shades of gray, and the best solution may well be somewhere between the two extremes.

As a basis for finding the right gray area, let's look at some fundamental assumptions and facts regarding supply and maintenance in a theater of operations. Then we can draw certain conclusions and establish criteria or yardsticks against which any logistical system—old or new—can be evaluated. A word of warning: since each of the points listed is built upon those that precede it, when you come to one with which you cannot agree, you might just as well stop reading. You won't agree with the rest.

These are assumptions on which a modern theater supply and maintenance system must be based:

- Any land warfare in which the Army may be in-

volved in the future will be either nuclear or potentially nuclear.

- Any land warfare which starts as a non-nuclear conflict may without warning change to a nuclear war.
- If nuclear exchanges occur, they will be of two types: short and intense exchanges against pre-planned targets, followed by intermittent strikes against targets of opportunity. I say "short and intense" because it will take no more than that to destroy pre-planned targets and as additional targets are uncovered they will be destroyed individually by "intermittent" fires.
- For the logistical chain the only effective defense against nuclear attack is to avoid offering profitable targets.

Theater supply and maintenance

Now let's discuss the basic factors that must be considered in developing a theater supply and maintenance system.

All supplies used by the Army can be divided into commodity groups, or classes of articles with similar characteristics. For example, clothing, food, fuel, ammunition, communications equipment, tanks, artillery, and the like.

The physical characteristics of the articles in each of these commodity groups, while alike within each group, differ materially from the physical characteristics of other commodity groups. If they don't differ, then they aren't properly a separate commodity group.

The demands for each of these commodity groups stem from different bases and result in separate and distinct distribution characteristics. For example, the demand for food stems directly from the population density. Consequently, large proportions of a theater's food stocks are consumed in rear areas. On the other hand, the demand for ammunition stems largely from the locations of divisional and corps artillery. The result is that only insignificant tonnages are consumed in other areas, though most of it must pass through rear areas.

While certain commodity groups, such as food and clothing, are required by all types of units, not *all* types of units require *all* commodity groups. In other words, there is no universal demand for an amorphous mass of "supplies"; each customer has specific requirements that can be satisfied only by the articles he needs.

Logistical support (supply stocks and maintenance capability), in order to *be* support, must be readily available to the user when, where and in the kinds and quantities he needs. For example, ample stocks of replacement howitzers support no one if they are stored a hundred miles to the rear, with only destroyed roads and bridges between them and the artillery battalion that needs a single replacement weapon.

Requirements dictate priorities

The maintenance characteristics of each commodity group differ materially from those of other commodity groups. For example, while there is considerable interchangeability in repair parts and maintenance skills among different kinds of tanks and among different models of radios, there is little if any interchangeability in repair parts or maintenance skills between tanks *and* radios.

Although the technical complexity of maintenance varies considerably among different commodity groups, that maintenance which is required is inseparable from supply. Maintenance is a service that cuts to a minimum the Army's requirements for new supplies. The requirements of supply dictate the priorities of maintenance effort.

The integration of logistical resources into tactical operations is a fundamental requirement of command. Each echelon of combined arms and services command must control the logistical resources it requires at hand to perform its mission. This is particularly important, and you must understand exactly what I mean before we go any farther. I am saying that a commander cannot be "relieved of the logistic burden" as so many recent plans pretend to do. To provide the commander of a division, a corps or an army with someone to assume his responsibility for logistics is like saying you can allot each rifleman a caddy to carry his weapons, ammunition and emergency rations. Of course, the commander can have someone handle the details and be responsible to him, but only the commander is responsible for everything his unit does, including logistical operations.

The echelon system of supply and maintenance provides a basic tool by which appropriate logistical responsibilities are allocated to command echelons.

Allocations of resources to meet these logistical responsibilities are based on demand experience tempered by technical knowledge of the commodity, and by judgment. To use an obvious example, during 180 days a direct-support unit may experience six demands for mounting screws for jeep glove compartments and two orders for ignition breaker points, but have storage space for only one of the two articles. Pure statistics say, "store the screws that are in high demand"; knowledge of the technical commodity says, "store the breaker points." Two jeeps will be out of action during 180 days for lack of breaker points; none will fail for lack of glove-compartment screws. Supply data must be interpreted by competent supply managers who know the commodity. Machines alone are not enough.

Now let's see what conclusions we can draw from our assumptions and facts.

Logistical support in being

Even though we might prefer that a future land war be and remain nuclear-free, we must always have all forces logistically ready for nuclear war. I mean ready from the point of view of having supplies of weapons in the right places to enable us to retaliate, and from the point of view of offering the least number of profitable logistical targets. Every force must always be supported by a logistical structure geared to nuclear war.

The most obvious enemy pre-planned targets in our logistical system are bottlenecks of transportation such as ports, beaches, airfields, railroad yards, bridges, passes, and so on. Their destruction during an intense atomic exchange is certain. Consequently, mass movement of supplies will be impossible during

and immediately after such an exchange. Local truck and helicopter movement will be possible in surviving areas.

After an intense atomic exchange, victory will go to that side which has at least minimum adequate resupply readily at hand throughout the theater and does not have to depend on a destroyed transportation net to bring it up. This, together with the concept of offering few profitable logistical targets, requires dispersion of resources laterally and in *depth,* and is directly opposed to the popular theory of "depopulating the battlefield" by moving logistical support well to the rear. Remember, logistical support does not exist unless it is where it is needed when it is needed.

Urgent tactical demands on the communications system during and immediately after an intense atomic exchange will take priority over logistical traffic. Consequently, the authority and ability (resources) to meet local conditions must regularly and effectively be decentralized to the lowest possible logistical command echelons. This is absolutely essential, for a very good reason. If a local logistical unit (company or battalion) commander is not trained during peacetime to solve the problems of supporting his customers on his own authority within policies established by higher headquarters, how can we expect him to learn to do it instantly under the pressure of imminent disaster?

Physical properties of commodities

Each commodity group has its own peculiar physical properties, demand basis, distribution pattern, maintenance characteristics, and types of using units. Each commodity demands its own type of skilled supply and maintenance technicians to provide competent management. These facts preclude the effective lumping of all commodity groups into a single "supply" system, or a single "maintenance" system. The same facts preclude effective operations through composite or multi-commodity "direct support" or "general support" units.

Because of these commodity peculiarities, a "single source of supply and maintenance" is not practicable. However, a single source of supply and maintenance for a weapons (or other materiel) system is essential. It matters little to the using unit if its shoes and its tanks are repaired at the same maintenance point. But when a tank needs service the unit should be assured that any part can be repaired—gun, radio or the vehicle itself—and in the combat zone the unit expects to get its tank back combat-loaded, including basic load of ammunition, rations and fuel.

The most practical means of providing this one-stop service is to ensure that the direct-support units of that technical service responsible for the major article (tank, helicopter, crane, teletypewriter or what have you) have incorporated organically within them the required maintenance and supply skills (regardless of parent technical service) and repair parts to support the materiel. These direct-support units should obtain their resupply and their back-up maintenance from appropriate sources of the various technical services. At first glance this may seem to be the same as various recent proposals for "composite" direct-support units. The basic difference lies in the fact that this proposal is a logical extension of responsibilities assigned to the Department of the Army technical services under the 701- series of Army Regulations, and by this means provides a parent agency to ensure preparation of complete technical and training literature and procedures. On the other hand, the composite unit, being branch immaterial, causes us to change logistical horses in mid-stream. It has no single parent agency for technical and training literature and procedures.

Logistical support at its best is a voracious consumer of manpower and supplies. The increased manpower and duplicate equipment forced upon us by the necessity for dispersion, will not allow the luxury of unnecessary headquarters. Real contributions to the logistical effort must be proved for each headquarters type unit. Our reorganization effort must be aimed at an effective—not an impressive—logistics structure.

So far we have dealt with a series of assumptions, facts and conclusions. From them we can draw a description, mostly in terms of performance standards, of the supply and maintenance system we need. Once this is done we can use it as a yardstick against which to evaluate current and proposed systems, and as a basis for developing an effective new system.

A series of balanced units

Our supply and maintenance system must be able to respond immediately to the needs of supported units under every condition of warfare. We must reduce to a minimum the demands on the transportation and communications networks during periods of intense atomic exchange and the subsequent recovery period. We must provide the user with an efficient weapons support system, and in furnishing this support must integrate both its maintenance and supply aspects under the same management.

Within each system of materiel support we must include a series of balanced units that can provide all locally required supply and maintenance of its materiel. These units must be distributed throughout the theater in direct relation to the demand for their commodities, and their number must be held to a minimum. These units must also be interchangeable to the maximum practicable extent in order to allow flexibility and improve recovery.

While resources (supply stocks and related maintenance capability) must be available at multiple locations, we must reduce the intermediate handling and non-essential consolidation of supply demands and responding shipments of supplies. In order to reduce reaction time, decentralized authority to act within established policies must go along with this decentralized capability.

If we are to foster lower-echelon capability to act, all logistical headquarters units—whether branch battalions and groups, or branch immaterial support or logistical commands—must center their efforts on establishing or interpreting and enforcing command policies and operational standards. They must assign support missions to subordinate units either in terms of geographic area or specific using units to be supported, or both, and insist upon direct contact in all

routine support matters between supporting and supported units.

They must designate higher-echelon supply and maintenance support sources for subordinate logistical units and insist upon direct contact between these units and those higher-echelon supply and maintenance support sources in all routine support matters. They must establish centralized supply management of only those articles over which such control is deemed essential and return supply management to local control as soon as the need for centralization ceases to exist. These headquarters must support the operating commanders of subordinate logistical units with the maximum feasible administrative services so that subordinate commanders can concentrate on their logistical support mission.

Now we have a framework against which we can compare recent proposals and upon which can be hung the meat of the logistical structure I shall propose. To quickly summarize, this framework says that you, the tactical customer, should have a single source of supply and maintenance for a weapon or other matériel system (not necessarily the same source for all systems); that the parents of these sources should be the appropriate technical services; that these weapon systems support units should be managed and equipped for independent local action; and that higher-echelon logistical headquarters should confine themselves to management in the broadest sense, forcing operations down to the units which provide customer support.

Most new concepts for logistical support organization and operations have been centered around various combinations of several concepts. One is the concept of composite "maintenance" units and composite "supply" units—the first to supply maintenance service and repair parts for all matériel, the second to provide all supplies other than repair parts. Another is the concept of a "small general depot" at field army and theater army level to receive, store and ship all supplies. A third is the concept of a "support command" at each echelon of combined arms and services from division through corps, field army and theater army—each to command, administer and operate the logistical units in the major command to which it belongs. Finally, there is the concept of a logistics operations (stock control) center for each field army and theater army—each to receive and process all requisitions, to allocate resources, and to direct shipments. Let's briefly examine each of these concepts.

Combinations of concepts

The composite unit concept, in which all matériel maintenance is lumped in one series of units and all supply in another, overlooks some critical fundamentals. First, it separates "maintenance" from "supply" when maintenance is really just another source of supply and should be managed by the same system. Consider one example. Under this concept, major articles like tanks are issued to the user by the "supply" unit. But lacking any maintenance capability, how can the supply unit assure itself or its customer that the issued tank is serviceable? Another fallacy in the composite unit concept is the lumping together of all kinds of supplies. Can you imagine anything worse than a fire that involves POL, ammunition and rubber tires? Such articles would never be stored together regardless of any composite supply unit concepts. We will always need specialized units not only to handle supplies of different characteristics but also to meet varying demands. Which brings up the point that not *all* articles are needed by *all* customers.

The basic flaw in the concept of the small general depot is that if it really is small it can't possibly be anything more than a supply point; and if it is really a general depot, it can't possibly be small. A description put out by one staff agency said that no element of the small general depot should be more than 15 miles from the depot headquarters. This would make a depot covering 300,000 acres! This is small? Actually it is so large that if you attempted to use a common labor pool, a materials handling pool or a transportation pool, it would take it most of the working day to arrive at a storage site. On the other hand, if each dispersed storage site were provided with its own labor, materials handling and transportation resources, one of the primary purported advantages of a general depot is lost. Consider also the effect of bringing these storage points close enough together to effect a pooling of common services. If we assume one "small general depot" in the advance section per typical corps force, each would have to store about 60,000 tons consisting of about 50,000 different kinds of articles. I suspect that such a concentration, or even a third of such a concentration, would make a prime target, and that its loss would cripple our efforts.

The support command concept has a number of variations, each of which can be applied in several ways. If a support command is looked upon as a strengthened G4 (being confined largely to policy, procedures, standards and priorities establishment and the management of critical supplies), with operations left to subordinate elements, then it has much to offer. On the other hand, if it attempts to control in detail all supplies and to centralize the routine operations of subordinate elements, then it can serve only to impede support operations and to create havoc in the event of its destruction by the enemy.

Here we might do well to repeat from AR 1-24: "Time and effort of those who manage [will] be concentrated . . . upon problems commensurate with their levels of responsibility." Let's apply this to the single problem of supply management at the direct-support level; that is, the unit which actually delivers to the user. Here the combined number of different kinds of articles issued by all the technical services amounts to about 30,000. We'll be conservative and say that during an average day there are demands for about five per cent of these articles and that of the more than 200 potential customers in the area only a quarter ask for anything. That makes 30,000 times 5 per cent times 50 customers or, conservatively, a minimum of 75,000 separate normal supply transactions in one day! If the decision as to whether to supply or not supply is centralized anywhere, the place will be figuratively swamped.

Now let's look again. Of those 30,000 articles probably no more than one per cent (300) are truly criti-

cal at any one time; critical either in the sense that stocks are very low, or in the sense that regardless of how plentiful they might be, their effect on the course of battle is so significant that they must be centrally controlled. This time we'll be generous and assume that of these 300 critical articles 50 per cent instead of five per cent are demanded during the typical day by half (instead of a quarter) of the customers. Thus we have 300 times 50 per cent times 100 customers, or generously a maximum of 15,000 separate critical supply transactions. I think you will admit that this in itself is a man-sized stack of decisions to be made by any centralized staff in any one day, and that a support command had better confine itself to this level of management.

Logistics operations center

In general, the same sort of comment can be made concerning the concept of a logistics operations center. The principal difference is in the magnitude of the problem since even the smallest of such proposed centers would serve not just the direct support echelon of a forward support command but the supply needs of an entire field army. We find now that the base figure is about 50,000 articles to be managed instead of the 30,000 at the direct support level. Of course, all transaction figures are increased considerably.

Instead of taking that approach, let's look at a situation that existed a couple of years ago in an overseas field army, where a particular direct-support unit was right across the street from an army depot. This depot was the only depot storage point, and it had all the army's depot stocks of its particular kind of supplies. The army's central stock control point was about 80 miles away. Under the central stock control procedures in effect, the direct support unit had to submit its requisitions to the central stock control point which took a recorded average of eight days to process the requisition through its machines, find out that the required articles were stored in its only depot for that kind of supplies, and direct the depot to deliver them across the street.

Now don't misunderstand me. I am not opposed to logistics management centers or central stock control points as such, but rather to the blindness of people who have tried to determine how they should be used. The whole objective of any logistical concept or support system must be quick delivery of needed supplies to the user. When you consider the tremendous volume of little decisions that must be made daily, this can be done only by decentralizing authority to act down low enough to be in manageable pieces. The higher echelons, including logistics management centers, must confine themselves to "management by exception" if they are to help support operations instead of impede them.

Although each of the four concepts we have discussed poses sizeable problems, when two or more of them are combined in a single logistical support plan the problems seem to increase by geometric progression. Again, security restrictions prohibit the discussion of any specific current plan, so we leave to the imagination the possible combinations of these concepts and their effects. Having tried to tear down the essence of most current proposals, it is time to suggest a system that will meet the criteria previously established. To do this we will confine our discussion largely to the use of one technical service as an example. Since I am most familiar with Ordnance I'll use that, but the ideas involved can be just as easily applied to any portion of our supply and maintenance system.

Decentralization is the key

It has been said that the mission of the army in the field is to fire ammunition at the enemy until his resistance ceases. While this may be an over-simplification, basically it is true and it provides the opportunity of stating that the mission of ordnance troops in the field is to supply and maintain that ammunition, the weapons which fire, the instruments which control those weapons, and the ground vehicles which transport all these articles and their supporting supplies. This is a fairly good share of the total Army supply and maintenance problem. In terms of tons of supplies or dollar value it represents more than all the other technical services combined.

I hasten to add that I don't intend to imply that "tons" or "dollars" are necessarily a measure of importance. I doubt that a commander with all the ordnance supplies in the world would find them very useful if what he lacked at the moment was radio contact with higher headquarters. Nor would a wounded man be very happy with having the best tank repairman at his side when what he needs is a surgeon. I might also add that black powder is a very poor substitute for food. The size of Ordnance, though, does serve to present a goodly share of the total supply and maintenance system.

Before going into the working level units of this proposed supply and maintenance system, let's look briefly at the structure of higher headquarters. First, regardless of our nomenclature (G4, division trains, support command, logistics command, DCSLOG, and so on), there is no question that the commander needs some person or agency to assist him in managing his logistics problems. Since the commander is responsible for both his tactical and logistical operations, his is the prerogative of determining just which kind of a logistics management headquarters he wants. But regardless of the type he selects, if he wants the system to function effectively, he must restrain the natural impulse of the logistic headquarters to get deep in the middle of operations. He must insist that AR 1-24 is the law, making certain that the company commander, at the bottom of the ladder, who must actually satisfy the users' demands, has the authority to do so. Decentralized operations is the key. With this decentralized authority and with proper policy guidance, almost any kind of a higher-echelon logistical headquarters will assist the working units of a logistical system in functioning effectively.

Support force must be less vulnerable

The current ordnance support system does not meet the demands previously discussed and is not capable of supporting anything but a purely conventional type war with a secure LOC. As an example let's assume a

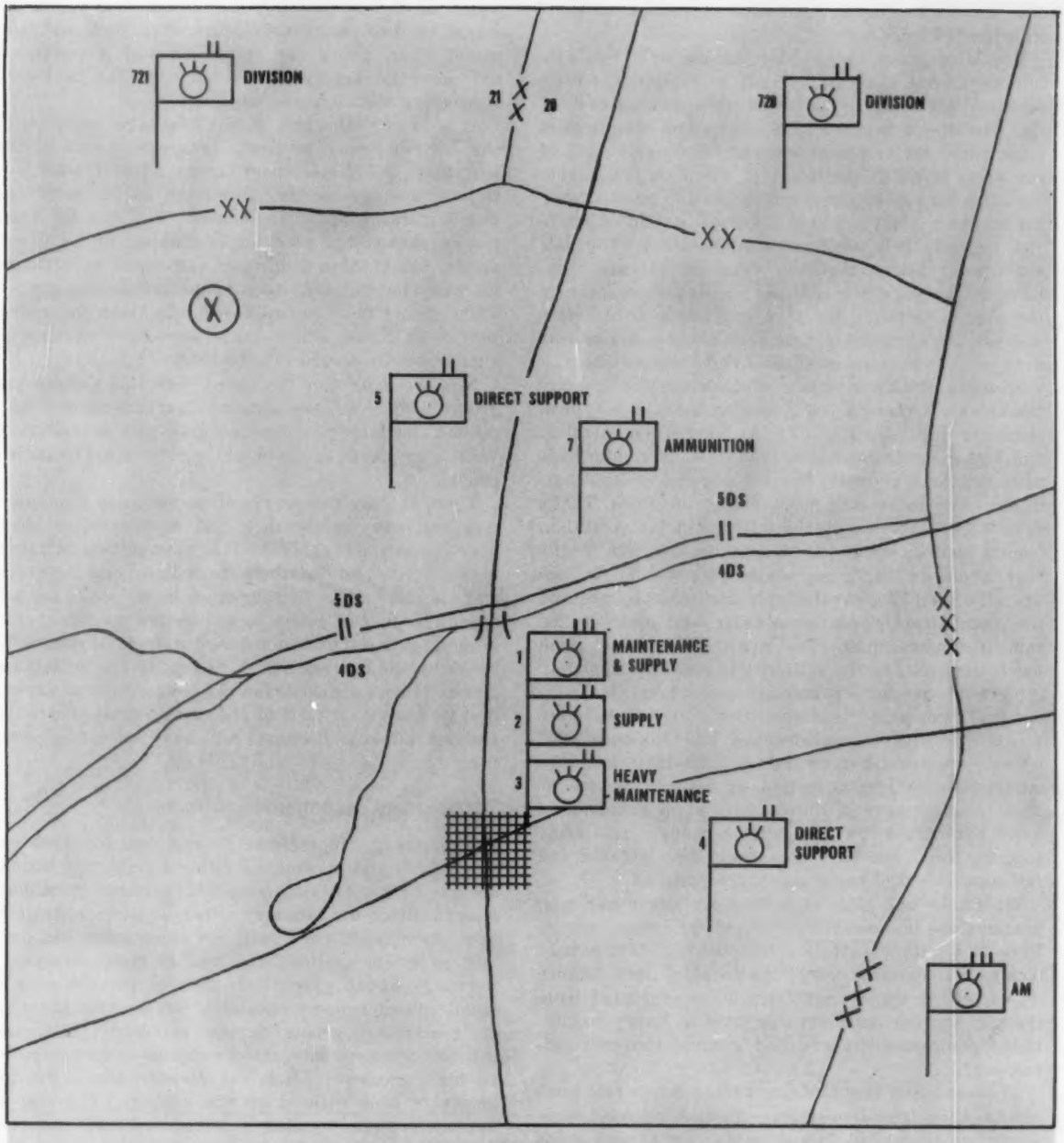


Figure 1. TYPICAL CURRENT ORDNANCE SUPPORT

2d Supply Battalion	3d Heavy Maintenance Battalion	4th Direct Support Battalion	5th Direct Support Battalion	7th Ammunition Battalion
3 Field Supply Companies	1 Heavy Maintenance Company	1 Direct Support Company	4 Direct Support Companies	1 Special Weapons & Missile Direct Support Company
1 Park Platoon	2 Heavy Automotive Maintenance Companies	2 Direct Automotive Support Companies	1 Direct Automotive Support Company	3 Ammunition Companies
	1 Recovery & Classification Company	2 Direct Support Missile Detachments	3 Direct Support Missile Detachments	

force, part of a theater, which requires about four battalions of maintenance and supply (M&S) units and one battalion of ammunition units for ordnance support. Under today's system the four M&S battalions are controlled by an M&S group, while the ammunition battalion belongs to an ammunition group that manages ammunition supply in our zone and adjacent areas. One M&S battalion would be composed of supply units operating one or more semimobile field depots. One battalion would be made up of semimobile heavy maintenance units to take the maintenance overflow from divisional and non-divisional direct-support units. The other two battalions consist of mobile direct-support units providing retail supply and third-echelon

maintenance support to nondivisional combat and service units. (Figure 1.)

The M&S group commander, having only two battalions capable of direct support, must split the total territory for which he is responsible, making each of the two direct support (DS) battalion commanders responsible for customer support in roughly half of the area. Each DS battalion is based on the supply battalion for replenishment of stocks and on the heavy maintenance (HM) battalion for evacuation of matériel beyond their maintenance capability. The HM battalion repairs evacuated weapons, placing them back in the supply system by turning them over to the supply battalion for reissue. This is an effective and efficient system—so long as there is a secure rear area with good communications and transportation.

In spite of this system's effectiveness for conventional war, it poses a few problems. Look at a typical customer in Figure 1 at (X). At least seven battalion and higher commanders are needed to insure him complete ordnance support. The DS and ammunition battalion commanders are most directly involved. That's two. There's the supply battalion and HM battalion commanders on whom the DS battalion depends. That's four. Then the M&S group commander who must manage all ordnance general supply and maintenance and the ammunition group commander who must do the same for ammunition. That's six. Not one of them has the capacity or the authority to provide completely integrated ammunition and general supply (weapons system) support to that customer. For this he must go to the force commander and his Ordnance staff officer—the seventh command involved. Interrupt communications or transportation, or destroy any one of these commands, and the whole system grinds to a halt! Yet with a few very simple changes this same support force can be made almost invulnerable and far more effective under nuclear conditions.

We'll take one piece at a time. Ordnance has long preached the inseparability of supply and maintenance. Here is a supply battalion composed of field supply companies. Yet that very "inseparable" maintenance on which the supply units depend is separated from them in another battalion composed of heavy maintenance companies (now called general support companies)!

(I must admit that Ordnance realizes this and some of the other flaws I will point out, and is taking steps to correct them; but in my opinion not enough steps nor fast enough. I would suggest that a major reason for the lack of speed can be traced to the divided authority and opinions in this area among Ordnance, DCSLOG and CONARC.)

All-around group headquarters

In any event, it is a simple matter to combine the field supply mission and the misnamed "general support" (now really heavy maintenance) mission into a number of true general support (GS) companies. Each of these new companies would have less volume of supply capability than one of the current field supply companies and less of a maintenance capability than the current GS units. However, the total wholesale supply and maintenance capacity of the force would be the same. More important, this capability would be dispersable over more sites, and each site would have, under the same company commander, not only the supply stocks but also the necessary supporting maintenance capacity.

This is only the first step. Now let's move on to the DS companies formerly assigned to two of the battalions and divide them among all four M&S battalions, also giving each battalion its share of the new general support companies. But the DS companies themselves need some shaking up. For example, today these companies can repair a tank and its weapons, but not its communications equipment. They should have incorporated into them the necessary radio-repair skills and parts. Other changes of similar nature should also be made.

Now we have four "balanced" battalions under one group instead of the current four specialized battalions. So far we've done nothing with ammunition. What I am about to say might horrify most Ordnance people.

There is only one ammunition battalion headquarters and one maintenance and supply group headquarters in the area. Take that ammunition battalion headquarters and distribute its skills among the group and the four M&S battalions so as to make an all-around ordnance group headquarters and four all-around ordnance battalion headquarters. Of course we break up the ammunition units among the battalions. Some changes are needed in the ammunition units, but first let's see what tactical and management effects the changes already discussed will have on our support force.

Tactical and management effects

Now the group commander can balance work requirements and capabilities either by shifting boundaries or by transferring companies between battalions. He can divide his territory into four parts instead of two. As a result each battalion commander has only half as much territory and half as many customers to worry about (Figure 2). Each has not only a mobile direct support capability but also his share of the semi-mobile general support capability. Each can provide complete integrated weapons-system support to his customers. Each can operate for a greater length of time without outside support. The loss of any one of them would leave untouched three quarters of each part of the force's ordnance support capability. In relation to our sample customer at (X), we now have two commands (the battalion and group) concerned instead of seven, and the level of decision has been lowered from the force commander and his staff down to the battalion commander. We'll discuss the resupply system later, but first a look at the ammunition units.

We will use the term "ammunition units" in the broadest sense to include "conventional" ammunition, missiles and rockets, and special warheads. Although all are explosives and require special storage and handling, they fall into two distinct groups. Conventional ammunition stocks are characterized by very high tonnages, few line articles and low maintenance requirements. The rest are characterized by relatively

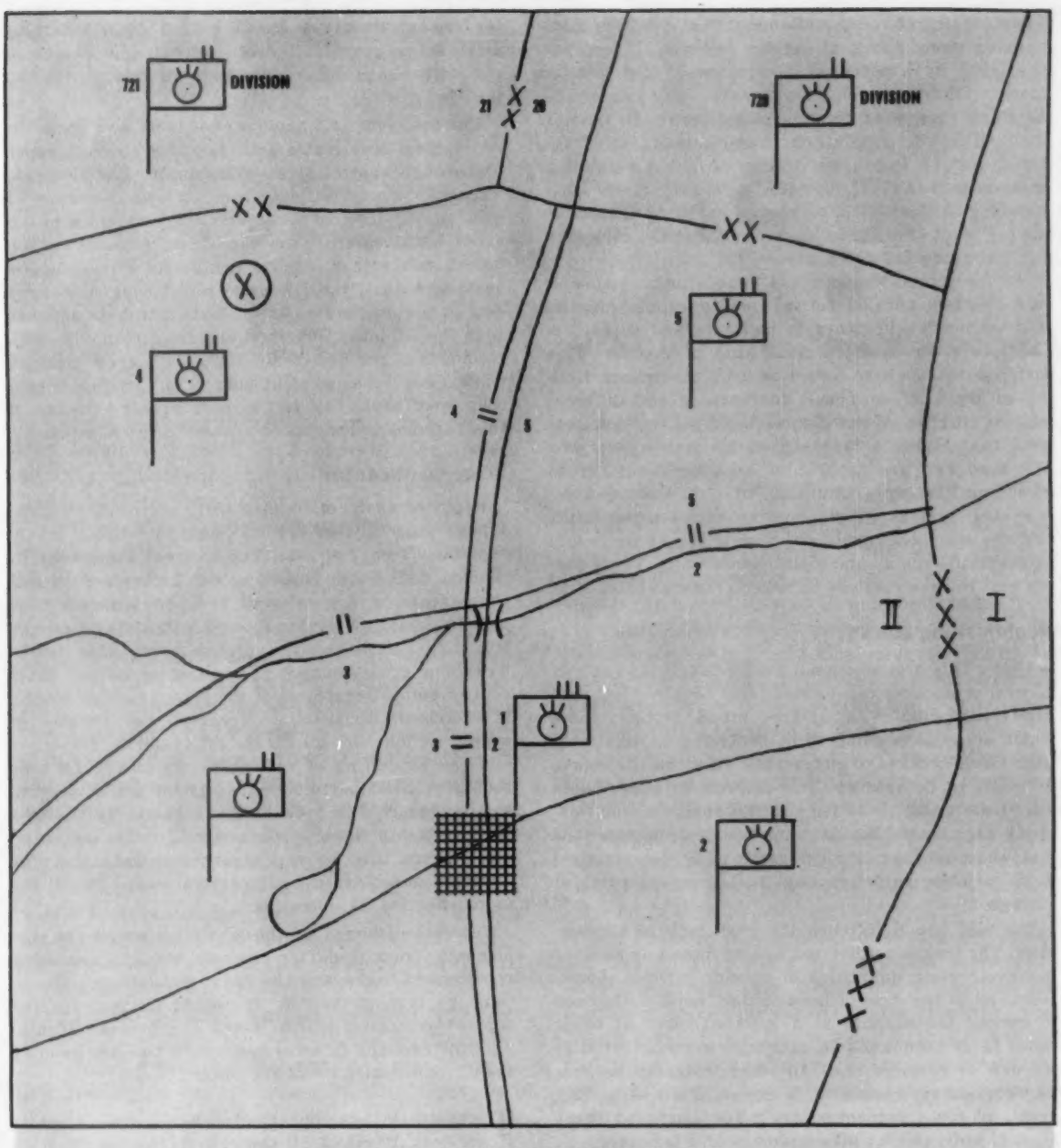


Figure 2. PROPOSED ORDNANCE SUPPORT

2d Ordnance Battalion
- 1 Direct Automotive Support Company
- 1 Direct Support Company
- 1 Missile Support Company
- 1 General Support Company

3d Ordnance Battalion
- 2 Direct Automotive Support Companies
- 1 Ammunition Company
- 1 General Support Company

4th Ordnance Battalion
- 2 Direct Support Companies
- 1 Missile Support Company
- 1 Ammunition Company
- 2 General Support Companies

5th Ordnance Battalion
- 2 Direct Support Companies
- 1 Direct Automotive Support Company
- 1 Missile Support Company
- 1 Ammunition Company
- 2 General Support Companies

low tonnages, many line articles and intense maintenance requirements. Normally, stocks of the former are stored on the ground, issued from there until exhausted, and replenishment stocks shipped into a new supply point. Stocks of the latter, being extremely critical, are usually kept on wheels in forward areas and moved to keep up with changing situations. To handle these distinctly different problems we need two basic kinds of ammunition units: special-weapons and missile companies, and ammunition companies.

Traditionally, conventional ammunition has been manhandled many times in getting it from the rear to the front by a series of companies of 250 men or more. There is no valid reason why materials-handling equipment that can negotiate rough terrain, and palletized ammunition loads, cannot be substituted for at least two thirds of the ammunition manpower back of the supply point level. Manhandling will still be necessary at the ammunition supply point. Palletized loads won't suit the customer, for his needs are too varied.

As for special-weapons and missile units, ordnance has had two parallel series: one to supply missiles and warheads, the other to maintain and supply repair parts for each different kind of missile. This latter series has been forced on it by the incompatibility of the test equipment for each of the different kind of missiles. We've now acquired the technological skill that makes this condition no longer tolerable. We need and are capable of building multipurpose electronic test equipment that will enable us to combine the various missile system maintenance units and the special-weapons and missile supply units into multimissile supply and maintenance units. These outfits also to be part of our balanced ordnance battalions.

Replenishing stocks

Under this organizational set-up supply and supply control procedures can be relatively simple. First let's divide our supplies into three broad groups: those which are always going to be controlled at relatively high levels because of either their effect on the course of battle or because of their extreme expense; those which are going to be temporarily controlled at relatively high levels because supplies are low; and the rest, those whose control is going to be decentralized down as close as is practical to the actual point of storage.

The last group includes the vast bulk of all supplies. The user is authorized by one means or another to have certain quantities of specific articles. Sometimes, as in the case of ammunition, he is authorized to expend his supplies at a specified rate. At other times he is authorized to exchange worn-out articles for new or repaired ones. In other instances he simply requests replenishment of expended stocks. In any event, his replenishment source is his designated direct support unit, and for all supplies of this last group he must be able to deal directly with that source. For its part the source must be able to satisfy his legitimate demands without reference to higher authority.

These direct-support units, each with a multitude of customers, resemble retail stores on wheels. Like retail stores their stocks are broken out of wholesale lots, stored individually on shelves and in bins, and issued as required in ones of this and twos of that. As with retail stores, inventories must be based on sales experience. Again, like retail stores, they must replenish not by ones or twos but in wholesale lots. On occasion this may result in temporary overstocks of some articles, but this is essential if their resupply source, the general support units, are to operate with a minimum of manpower. Just as the using unit must be able to deal directly with its direct support unit for replenishment of stocks (other than controlled articles), so must the direct-support unit be able to place its replenishment demands directly on its support sources.

The first source it must exploit is its own shops for recovery of serviceable articles either through repair or through controlled cannibalization. For those demands it cannot satisfy from its own resources, it goes to its designated general support units of the supplying technical service. These general support units, each with a smaller number of direct support customers than the DS units have using customers, deal to the maximum possible extent in bulk supplies. Like the DS units their first source of resupply is the reclamation performed by their own shop elements while their replenishment source for articles beyond their own capability is the next higher echelon: in this instance a designated advance section depot.

Exercise of control

Replenishment of temporarily controlled articles (those currently in critical supply) begins in the same way from the user. The moment they reach an echelon (DS, GS or depot) at which they are critical, these requests are referred through logistics command channels to the headquarters that exercises control. Depending upon the circumstances, this can be battalion, group, support command or central stock control point. Regardless of the level at which control is exercised, decisions will concern the priority of supply action, the allocation of available resources, and the expediting of replenishment action. As soon as higher headquarters replenishment action is sufficiently effective to reduce the shortages in the system, control of the article is returned to the operating level. From this we can rightly conclude that the fewer such articles a headquarters must control, the more effective its operation.

For replenishment of those articles which are permanently controlled (for example, nuclear warheads, replacement tanks, and the like), requests and allocations go through tactical command channels to the support command which issues the necessary shipping instructions in accordance with the decisions of the G3 or commander of the force.

THIS system is applicable to any of the technical services. It meets all the criteria for an effective field supply and maintenance system and, being easy to establish by evolution, it takes advantage of the knowledge and skills already in the Army. No drastic shake-up or major retraining program is necessary.

Of all the technical services, the Engineers and Ordnance, to my knowledge (and possibly others I don't know about), are striving mightily to modernize their support forces along the lines I have described. The difficulty is that they, your technical experts, are having a hard time selling unglamorous improvements based on years of experience. "Composite" units, "small general depots," "support commands" and "logistical operations centers" sound so much more attractive to the uninitiated. The trouble is they won't provide the support you need when you need it. It's time we took another look!

Training Challenge

Our service schools must be faster, surer, better

Brig. Gen. B. H. POCHYLA

DURING the next decade, the various arms and services of the U. S. Army will face a great and compelling challenge: that of training soldier-technicians for the modern Army.

Our research and development laboratories are striving mightily to produce equipment designed to give combat commanders of today and tomorrow the type of equipment they require to assure battlefield success. There seems to be no limit to the steady stream of intricate weapons systems and complex communications and electronic equipment being developed and manufactured for our fighting men.

But time is running out on our service schools. The individual soldier is still the vital, basic element in any future conflict. Yet the methods we use in training him simply have not kept pace with our hardware developments.

Training was simpler during World War II. Our soldiers were in for the duration. By today's standards many of the courses were short. Equipment was less complex and easier to operate and maintain.

Extended ground warfare allowed sufficient time to expand our training efforts. Posts, camps and stations mushroomed into the greatest training facility in our history. Training films were widely used to help teach the many subjects we compressed into an excellent program. Our instructors effectively utilized training aids that illustrated their teaching to the point where things became crystal clear to even the newest recruit.

Civilian educators, especially those who saw service, noted our methods. Many of our procedures eventually became a regular part of the civilian school system.

Now 15 years have passed during which time we fought in Korea and stepped on the threshold of outer space. The time has come for those of us who are charged with the state of today's military training to ask a few pertinent questions. By laying these problems on the table where we can all get a look at them, we will be able to come up with solutions that will enable us to streamline our programs and meet our training challenge.

Are we developing "junior engineers"?

Are we properly training our troops to handle their new "sophisticated" equipment? Have we been bold enough in developing methods that match the complexity of this equipment? Are we attempting to develop "junior engineers" for jobs that require only mechanics? Are we giving the best instruction in an increasing number of specialties while our school overhead and experienced training cadre continue to shrink?

Once again we must install ways and means of teaching that will meet the increased demands of today's and tomorrow's training. We must realize the needs of today's recruit and tailor our training programs so that he will be able to absorb the greatest knowledge and skill in the short time he is with us.

The training problem which confronts us calls for two solutions. The first solution is toward a short-range approach, something we can put into operation immediately. With the breathing spell thus provided, we can concentrate the research and development efforts of our educators and training experts toward developing a long-range program that will meet our needs.

The short-range problem needs several solutions: making instructors' jobs more attractive to above-average officers and enlisted men; stabilized tours for instructors; further exploration of educational television and video tape techniques; improvements in training aids, particularly in the three-dimensional field; and an improved method of screening students and recruits.

Even under ideal conditions, training can become relatively dull and unglamorous. It holds little if any appeal for the hot-shot officer or enlisted man. Most of these high-type soldiers prefer to volunteer for more attractive and interesting assignments. At many of our service schools the teaching load is so heavy, because of a shortage of qualified instructors, that the hours on

the platform are excessive. Much midnight oil must be burned in preparing for the next day's assignment.

Teachers need training too

Further, it has become necessary to augment our instructor staffs with recent graduates of the MOS courses. Before they can teach, these graduates require extensive preparation, additional technical training, special courses in methods of instruction and in the psychology of learning and close supervision. All these factors are costly in terms of time and money and impose stringent restrictions on the desired flexibility which should be inherent in any school faculty.

It is evident that instructors should be assigned for a minimum of 36 months. The influence of these specialists on the developed proficiency of graduates demands their retention for a maximum period.

Few qualified instructors are interested in more than one tour on the platform. Often newly arrived replacements are instructors only by virtue of a recently acquired title and MOS. They require considerable polishing and training before they can take their turn before a class. Service schools are using more civilian instructors all the time. This helps maintain our teaching standards (ratios of overhead to students) but often it results in an unbalance between civilian and military instructors.

Proper recognition for a job well done is one way of enhancing the attractiveness of a teaching job. To this end, the U. S. Army Engineer School has instituted a commendable program which is paying good dividends.

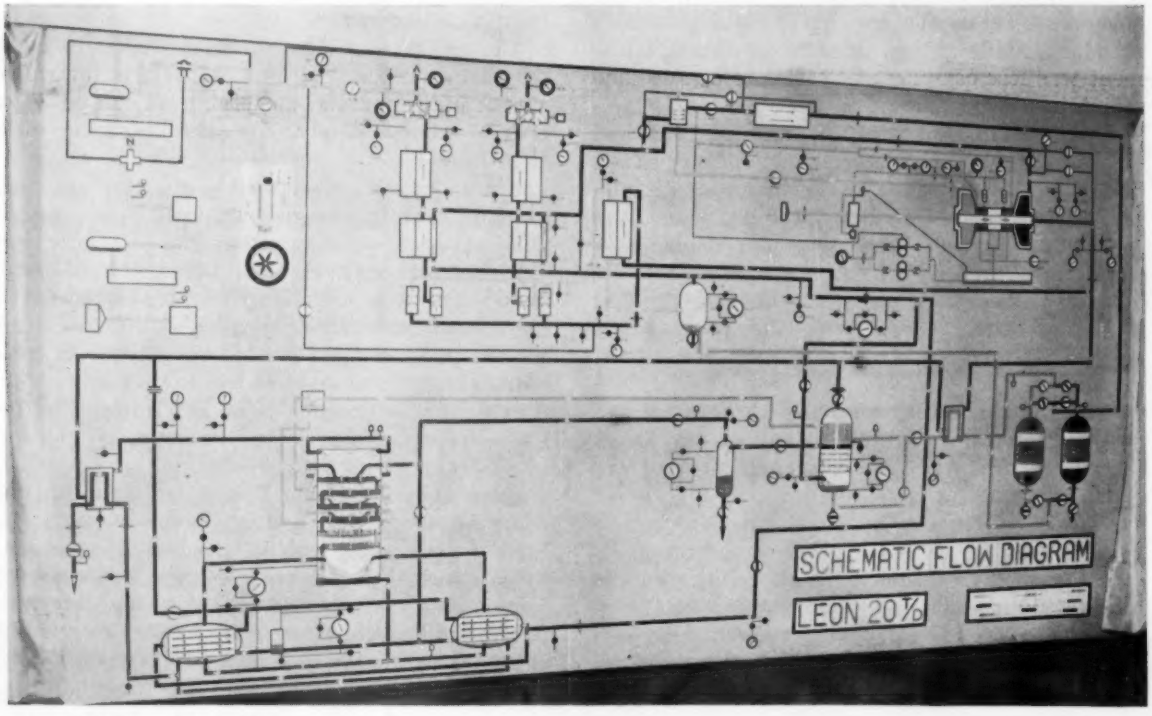
Prior to departure for a new assignment, highly qualified Regular Army instructors report to the commandant of the School for oral or written commendations. They are encouraged to request reassignment to Fort Belvoir on their next change of station. Direct communication with the commandant is authorized. This enables these specialists to transmit relevant data concerning too much or too little emphasis on subjects included in courses compared to knowledge required on the job.

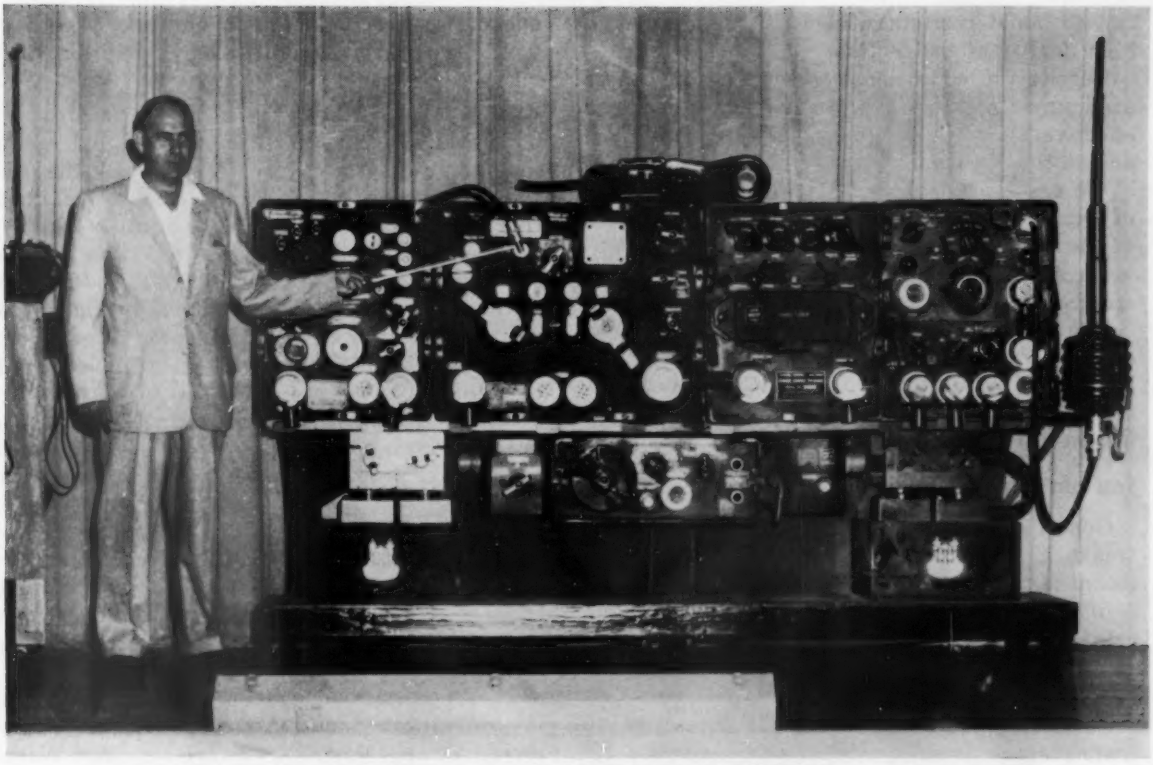
Top instructors are invited to notify the commandant personally, 120 days prior to return from overseas, of their desire to return to The Engineer School. Arrangements are then made with the career management people to channel back to the School those interested. As a result of this aggressive program, many instructors are now serving their third tour at the School, in different training spheres.

Convince instructors of their importance

We must also convince our instructors of their vital importance in the training picture. Despite the increased use of training aids, some of which we will discuss, the instructor is still the main

Huge diagram on "bread-board" is effective aid in LOX Plant Operation Course, Fort Belvoir





Blow-up of "Angry Three" radio gives Armor School students detailed instruction at Fort Knox

link between the student and what he must learn.

No longer valid is the long-nourished idea that, given a sound basic education at a service school, a soldier develops considerably after joining his unit. For one thing, we don't have the old-time noncommissioned officers with the wisdom and interest to develop newly assigned men. Shortage of funds has curtailed our field training and large-scale exercises. This again focuses the spotlight on the important role of the school instructor.

The instructor's importance becomes even more apparent when we consider that he must teach more in less time. Many courses are being shortened at a time when more knowledge must be fed to the student. If our instructors are to successfully meet this new challenge, new methods of instruction and improved training aids are necessary.

Extensive use of TV

One new method involves the extensive use of closed circuit television. It has many advantages, not least of which is the fact that the current generation of young soldiers has grown up with TV and accept it as a medium of information.

For years the U. S. Army Signal Training Center at Fort Gordon, Georgia, has utilized closed circuit educational TV. One of the largest and most completely equipped studios in the nation serves this center which in fiscal year 1960 graduated more than 20,000 trained communications specialists.

Seven closed circuit channels transmit instruction to monitor sets set up in more than 200 classrooms. In order to realize the greatest profit from this method, these programs are carefully integrated into the schedule of instruction.

Contrary to popular belief, educational TV does not replace the instructor; rather, it assists him in achieving his teaching objectives. The TV camera can bring scarce equipment into every classroom, allowing each student a close-up look at its smallest component. In many instances, this shows the student an operating picture that under normal conditions is impossible to obtain.

Development of video tape equipment enables us to make additional use of top instructors after they have moved on to new assignments. By taping their instruction talks, we can reshow them to future classes for as long as the material remains current. These tapes are also used in training instructor classes to teach successful platform techniques to novice instructors.

Finally, we can realize a major residual advantage of video taping and closed circuit TV in the field of mobilization training. In time of emergency, we will be able to quickly expand our teaching platforms so that they reach thousands

of additional recruits while still maintaining a high quality of instruction.

Despite the educational wonders of TV, there are many occasions when the instructor needs an effective training aid at hand in the classroom, and on the platform with him.

We are all familiar with large-scale mock-ups of equipment. The Communications Department of the U. S. Army Armor School utilizes a mammoth AN/GRC-19 radio set that clearly demonstrates operational methods.

The Engineer School is noted for its lavish use of vivid colors to point up various training aids. In teaching radio theory, different colors set off separate sections of schematic diagrams included in textbooks.

You can't "make a soldier out of anybody"

Gone to Valhalla is the Old Sarge who could "make a soldier out of anybody." The soldier-technician required by the modern, mobile army is of a new breed. Not everyone now being channeled into our training systems has the capability or the background to successfully absorb our accelerated instruction.

Early last year a program for screening incoming recruits went into effect at the Signal Training Center. Each incoming student is given a simple questionnaire designed to reveal potential problems that could affect his ability to learn. If he gives an affirmative answer to any question, the soldier is interviewed by specialists at the mental hygiene clinic of the post hospital.

Those students found to be inept are discharged from the service. Others whose drawbacks can be effectively overcome get special counseling from instructors and company commanders. These supervisors work from a report from the clinic which defines and clarifies the deficiency.

By sending home the inept, valuable spaces are assured for students who will benefit most from our highly specialized schooling. In addition, soldiers who need counseling and special attention are earmarked from the beginning. This enables instructors and commanders to single them out for closer supervision.

Statistics show that from 15 February 1960 to 22 August 1960, 3,038 potential trainees were screened. Of these, some 1,220 answered one or more questions in the affirmative. The results of the follow-up interviews and special counseling are revealing.

However, insuring that the right student is selected and providing him with the best possible instructors and up-to-date training aids avails us little if we do not tailor the course to his particular MOS.

I believe we are training too many "junior engineers." By that I mean we train a soldier to operate or maintain equipment that is too far developed above the skill called for by his MOS.

Concentrate on the career soldier

Some of our two-year men now are undergoing long and highly specialized training. By the time they are able to put this knowledge to use, their tour ends and we start training another batch.

We must realign our courses so far as possible so that the degree of training of inducted recruits is confined to only what they need to know. The more advanced instruction must be reserved for the career soldier whose skills and knowledge will be available to us over many useful years.

Marginal improvements in our training methods are not enough. While we are working on the short-range problems we have discussed, we must never lose sight of the long-range objectives. If we are to arrive at permanent solutions to the problems that face us today, more R&D effort is necessary. If we are to overcome the training challenge of the next decade, we need right now a breakthrough in our training—a quantum jump in methods.

The Department of the Army is taking steps in this direction through the Human Resources Research Office (HumRRO) of The George Washington University. This group of psychologists and scientists is under contract to the Army to help us find solutions to the many vexing training problems that plague us. Through studies such as Task Repair and Task Jobtrain we hope to streamline our training procedures so as to gain more specialists in less time.

We could save some training time if we prepared today's youth along technical lines before they enter the service. It might be possible to establish in high schools certain technical prep courses that teach some of the basic theory required in many of our technical specialties.

Self-tutoring through machines

The use of automatic tutors is opening a new frontier in the field of progressive education. There is intensive interest in the application of these methods toward improving the rate at which students learn. These devices provide for individual utilization of an instructor-less method of teaching. The system introduces the matter to be learned in small, logical units, and tests the student's comprehension and ability to apply the material to realistic problems.

Correct responses to questions are so identified and additional details reinforce the student's knowledge of the material. Incorrect answers are indicated to him, the fallacy in his reasoning is pointed out, and he is directed to return to the initial problem so that he can reconsider his reply.

The machine contains a series of programmed

TV cameras dolly up close to scan details of an electronic device as the Army makes use of closed-circuit television in its schools. Here television is being used to bring instruction from expert teachers at the Army Signal Training Center, Fort Gordon, to scattered Army National Guard and Reserve units.

explanations, facts and test problems designed to present information and to review, test and elicit the proper student response.

The value of these machines for military use is readily apparent. They will afford individual progression, immediate correction of errors and misunderstanding, a record of the student's progress that spotlights any problem areas, replacement of real equipment in trouble-shooting practice, and a possible lessening of our instructor load.

They should be particularly effective for individual tutoring, student self-improvement, make-up instruction, and performance testing.

At Keesler Air Force Base experiments are being conducted wherein control groups study basic electronic theory by using one type of teaching machine. Results of this study will aid the other services in planning for ultimate use of these machines.

To move into an even more radical field of education, the possibility of learning while asleep projects a fascinating picture into our search for methods of learning faster. Although it may be years before this method is sufficiently developed to use in our schools, it is easy to see what a boon this innovation would be to our accelerated system.

IF we really believe that the soldier is and will continue to be the vital factor in any combat situation, we must place the same stress on efficiency in his training that we demand for his weapons. This is particularly important in the cold war with training resources curtailed and so little time in which to employ the soldier-technician after he is trained.

Let's continue our R&D efforts on hardware full force, but let's also place the same necessary emphasis on our training. Like our equipment, let's make our training lighter, smaller, and better. In short, let's microminiaturize it!

That is the training challenge of the future.

A British officer friend turns from the huntin' of the fox and the shootin' of the birds to observin' that the deadly professionalism of the American officer doesn't make for the well-rounded man

NO TIME TO STAND OR STARE

Col. PHILIP McC. BOYD

For the last 20 months I have been attached as a liaison officer to the operations division of a large U. S. Army headquarters. During that time I have made many good friends; become a convert to "the American Way of Life"; formed a deep admiration for the U. S. Army, its officers and its enlisted men; and reduced my golf handicap by 10 strokes.

During a recent trip with a senior general officer of my headquarters, I was rash enough to express some opinions on the U. S. staff system as I had observed it. Rather than hitting me smartly on the head, as I probably deserved, he suggested that I commit my remarks to paper and submit them to ARMY for publication.

I would stress that what follows are entirely my own opinions, probably ill-informed, and that they are offered with due humility. I have endeavored to avoid invidious comparisons.

During my 20 months, there have been four chiefs of staff and four chiefs of the operations division; at the other end of the scale, a young lieutenant colonel has had five different staff assignments within the headquarters. Furthermore, it is by no means exceptional for a time-lag of up to two months to occur between the relief of a staff officer and the arrival of his successor. The result is three-fold:

- Individual officers, particularly at the lower levels, take several months to absorb the complexities of the procedures and problems involved in the work of a large headquarters, particularly if there is no physical hand-over. This period of adjustment is largely non-productive, or at best slows down the tempo of work.
- Conversely, the period of optimum efficiency of the individual officer is curtailed as a result of his reassignment to some other task, where the settling-in process has to be repeated.
- In order that all necessary information might be available to the staff, much unnecessary paperwork is required. Between the commander and a junior staff officer there might be six successive levels.

When the commander wants information, a requirement goes down the line and some hard-working Indian burns the midnight oil and produces what he thinks is required. This goes back up the line, being duly modified and amended by his seniors. Eventually it reaches the top only to be rejected as being not exactly what was wanted. Of course I exaggerate, but frequently I have heard of staff studies being returned several times for revision or recasting where—in the opinion of the Indian—this could have been avoided had he been more accurately briefed on the requirement in the first instance.

I sometimes get the impression that speed is considered synonymous with efficiency, whereas of course it is only one factor, albeit an important one. There appears to be a tendency to set unduly short deadlines for submission of staff studies or logistical reports. These often arise on Saturday mornings and require continuous weekend work for the Indians involved. The result must sometimes be that work is hurried, the necessary facts are not fully accurate, and the final answer is either at best incomplete or at the worst incorrect. Eventually,

much unnecessary work will be required to straighten things out. A well-known English hobo poet once wrote:

What is this life, if full of care,
We have no time to stand or stare?

This might be a dangerous philosophy, but time for reflection, as requested by the poet, often will pay a good dividend in the long run.

Few officers appear to take their full allowance of leave; further, the time they take appears to be in inverse proportion to rank. The more senior the officer the less leave he takes, and the leave that is used is in shorter spells. The results are that

- Subordinate officers rarely are given responsibility above their current slots. This is not only poor training but possibly engenders an inferiority complex and a feeling of irresponsibility.
- Officers, unbeknown to themselves, become jaded, stale, and below peak efficiency.

I should like to see a rule that only in most exceptional cases (as authorized by the commander personally) officers would fail to use their full allowance of leave. Furthermore, at least three weeks should be taken in one bite.

It seems to me to be essential that the higher the rank the greater the responsibility, but the lesser the actual workload. This may be a peculiarly British outlook but certainly it does not apply to the U. S. staff system as I have observed it. This I feel is partly the result of the search for perfection. If subordinate officers, at all levels, were given more scope for decision, maybe more errors would be committed and some horrors perpetrated, but the mass of paperwork flowing upwards would be greatly reduced. Senior officers would escape the morass of daily trivia and would have more time to visualize the larger picture. This delegation of responsibility does not, of course, absolve ultimate responsibility. A British senior officer once said I could make any mistake once, but God help me if I made the same mistake a second time. In other words, senior officers must be prepared to back up their juniors who fall into error.

Having by now deeply offended my American friends and colleagues, I must go full circle and do likewise to my compatriots. There is a traditional outlook, still occasionally found in the British Army, where one's profession is regarded as "a bit of a bore" which should not be allowed to interfere with "huntin' [the fox], fishin', or shootin' [birds and animals]." We tend to regard ourselves as amateurs—exceptionally gifted, of course, but nevertheless amateurs. Now the U. S. Army is definitely professional; one's profession should, and most often does, take precedence over all other pursuits. The officer most likely to succeed is he who is dedicated and forsaking all else cleaves only to the Army.

To my mind, both attitudes are wrong. The traditional British attitude is archaic and obsolete; it should have wilted with the advent of mechanization; it should have died with the arrival of nuclear warfare. However, it still survives in certain circles.

On the other hand, I realize that to criticize the dedicated American outlook must sound akin to treason. But do not misunderstand: I am not criticizing unswerving loyalty, nor am I criticizing the desire to be totally efficient. To give of one's best at all times is basic to any profession, military or otherwise. What I do criticize is the assumption that to achieve these aims one must pursue his military education and career to the exclusion of all else. In war, yes; in peace, however hot the Cold War flourishes, no. Man cannot and should not be expected to live by bread alone; to live in a military vacuum is not sufficient. The joys of family life, the pursuit of knowledge, the art of conversation, the appreciation of the arts, the proper enjoyment of leisure; these are some of the many attributes which go to make a balanced person.

To conclude, I repeat that both attitudes are wrong. As in everything, there is a happy medium; where within the two extremes this lies is a matter of opinion and will, of course, vary as between individuals.

We Must See With Our Own Eyes

Thirty years ago the artillery couldn't sell the idea

Major General H. W. BLAKELEY

I HAVE a rather personal footnote to the articles on Army aviation which were featured in the November 1960 issue of this magazine. Progress, it will be seen, came hard in the early stages of the development of the Army's air activities.

From 1924 to 1930, while stationed at Fort Sill, I was in close touch with the Army's air problems. During the first year I commanded a battery. I attended the Battery Officers Course the second year, and was a gunnery instructor for four.

Aerial observation of artillery fire was a function of the Air Corps. An observation squadron and a balloon squadron were stationed at Sill. Students at the Field Artillery School were taught a course in air observation in order that they might better understand the air observer's problems.

The air observer, in his open-cockpit plane, was handicapped by the necessity of wearing helmet and goggles, plus heavy gloves and a face mask in cold weather. He had to send and receive in code and had to reel out an antenna with a lead "fish" at the end before communication could be established. Occasionally a nervous student let the reel handle slip, with the result that the fish snapped off with disastrous results if it hit a roof in Lawton. The standard joke was: "What do you do if you lose your fish?" Answer: "Catch it in the radio net!"

During my last year at Sill I was on flying duty —meaning I drew an increase of 50 per cent in base pay. In addition to our routine duties, we had the responsibility of maintaining good relations with the Air Corps officers. At the same time, we had to protect student officers, some of whom were flying for the first time, from the tendency of bored pilots to give them the works during their first orientation flights. This violated orders, but there were no such restrictions when they carried an instructor as passenger.

I happened to be up in an observation balloon one afternoon when I noticed a plane doing acrobatics. It was out of sight of the airfield, but I was able to identify the plane. Later, I checked with the student passenger and found he had been made violently sick. I reported the pilot.

A few days later I had a routine mission of dropping a message during a field exercise. My pilot was the one I had reported—not, I suspect, by coincidence. He got high over the marker, spun down, straightened out at the last possible moment and, after I had thrown the message bag, climbed steeply, turned around in his seat and gestured that he was going to do rolls. We were in a light training plane, and the passenger, considerably in rear of the plane's center of gravity, got a whip during violent maneuvers.

We barrel-rolled back to the field. When I climbed out I said, with what was certainly a sickly smile, "One more roll and you'd have had a sick passenger." He answered with obvious honesty, "One more roll and you'd have had a sick pilot!" We got along all right after that.

AT the end of my tour, knowing that official recommendations were getting nowhere, I wrote an article about what was needed if the artillery was to get adequate air observation. The essence of the piece was that at the end of World War I all senior artillery commanders had recommended that "aerial observers" should be artillerymen; that the Air Corps pilot was simply not interested in being an observer; that he didn't know the current condition of the artillery unit for which he was working (ammunition supply, state of training, shortage of personnel, perhaps a gun missing from a battery); above all, he did not have to face the artillery commander after an unsuccessful shoot. If a complaint ever got through channels to his Air Corps commander, he could blame everything on the artillery's communications or firing.

My recommendations were conservative in the extreme; in retrospect they were even unimaginative. They did not envisage artillery having its own planes and merely suggested that artillery observers should have "enough dual control instruction to enable them to make a landing in an emergency if their pilot be incapacitated."

There was one good clairvoyant statement. (Remember, this is 1930.) "Many junior officers in the next war will regard getting on a horse as more of an adventure than climbing into a plane."

THE editor of *The Field Artillery Journal* promptly returned my article with a polite rejection. My new station was at Fort Myer, across the Potomac from Washington, and I soon was told that my piece had been submitted to the War Department. The editor had been informed that it was undesirable to publish anything that would aggravate relations between the Field Artillery and the Air Corps.

From 1936 to 1938 I was back at Sill, this time in the Department of Tactics. The Air Corps had written for its officers a new manual on observation of artillery fire. We reviewed it at Sill, fortunately before publication. Nothing but a complete rewrite would make it acceptable or even usable. The subject clearly was one which the Air Corps wasn't taking seriously.

In 1939, while a student at the Army War College, I came across my 1930 manuscript. I sent it unchanged to *The Field Artillery Journal*. It was promptly published in the May-June issue under the title "We Must See With Our Own Eyes," along with other pieces on air observation and a strong editorial.

DURING those nine years no progress had been made. Of course, my article was only a minor part of the pressure for control by artillery of all its observation, and this pressure now began to get results. By the time we were in World War II we had our own observers, pilots and planes. In Europe, at least, the artillery air observers often were the difference between success and failure. Major General Raymond O. Barton, who commanded the 4th Infantry Division in Normandy, wrote after the war: "It was more a matter of the infantry supporting the artillery than the artillery supporting the infantry. . . . The basic evidence of the fact is that the doughfeet never wanted to attack unless a Cub airplane was in the air."

The constant emphasis during the training of artillery pilots and observers in the World War II period was on the fact that primarily they were artillerymen, members of their battalion or of a higher headquarters staff, who did most of their work in the air.

A RETIRED officer, viewing current developments from the sidelines—from the cheap seats behind an end zone might be a better phrase—obviously isn't in a position to make accurate comments, but a word of warning may be justifiable. As Army aviation expands there will be a tendency to pool planes, pilots and observers in the name of economy and of better supervision and maintenance. If that drift is not controlled, the Army aviator will begin to feel he is just that and not an artilleryman, a doughboy, a tanker, or an engineer working, in most instances, for his battalion or battle group, subject to the close control of his unit commander and to the influences of his fellow ground officers.

As was said in this magazine's Army aviation issue, the combat commander on the ground must "own" Army aviation. More than that, the air components should belong, depending on function, to the smallest units that can use them efficiently. Any other way and we'll be drifting back to the days of the Army Air Corps.

ARMY cerebrations

THE WEIGHT OF CONFORMITY. *In striving to modernize we are neglecting proud traditions and ceremonies*

Col. GAMMA RAY

The United States Army, born of necessity, nurtured in hardship and challenge, matured by setbacks and victories, has written into the pages of American history glorious chapters which recount campaign after campaign. Its soldiers, of whose gallantry we sing, wore many distinguishing uniforms in a variety of colors.

Some Continentals wore hunting dress, but a corps of light infantry, organized by LaFayette, had light-blue coats, white waistcoats and breeches, black leggings, and leather hats. The Legion sported plumes, white belts and red waistcoats. Winfield Scott's Regulars had gray coats, white trousers and red sashes. Captain May's saber-wielding 2d Dragoons wore blue uniforms. The 13th Infantry fought at Vicksburg in soft, dark-blue fatigue caps, dark-blue sack coats and light-blue trousers. The Indian-fighting cavalry flashed dashing yellow stripes on breeches and yellow scarves about necks. Lieutenant John H. Parker's Gatling gun detachment at San Juan Hill wore campaign hats and white stripes on trousers. At Peking the 14th Infantry had canvas leggings and choke-collar olive drab. The 8th Infantry at Bagsak Mountain wore campaign hats and carried Moro-stopping .45 pistols. At the Marne the 3d Division's tin hats hung at a cocky tilt. The 82d Airborne in Sicily wore handsome jump suits; the 9th Armored at Remagen, the practical combat dress of armor troops; the 2d Division at Chipyong-ni, fur caps. These are the men who in combat molded the traditions, shaped the history, and performed the gallant deeds of the U.S. Army. They were soldiers and looked it—and were proud.

We've gone backward a long way. Army Regulations 670-5 (28 September 1959) says this of what is supposed to be our most impressive and fanciest uniform, evening dress: "A conventional commercial type civilian tail coat converted into a military garment by removing the commercial buttons and replacing with United States Army . . . coat buttons. . . ." Mind you, these regulations don't say the coat will *look* like a commercial-type tail coat: it says it *is* one! Thank Heaven, though, for the U.S. Army buttons.

But not only in the matter of uniforms are we neglecting some of the Army's traditions: important dates and anniversaries are also short-changed.

In striving to modernize, are we neglecting tradition and ceremony? In trying to make the Army attractive, are we casting aside noble practices and customs, things which give the Army depth and heart? In trying to please everyone, are we cutting into the Army's muscle, crippling it? If you answer yes to all these questions and deplore the answers, you may be regarded as a reactionary. One might think that a traditionalist or one who favors remembrance of things past is unthinking, unimaginative, sour—a now-in-the-Old-Army, antiprogress clod. If a man is totally reactionary, then he is such a clod.

What I am saying is not intended as reactionary in that sense. Obviously, no soldier in our age of technical advances, superweapons, nation-obliterating warheads, and the absolute requirement for progress in all things, wants to go back to wrap leggings, horse cavalry, semaphore signalling, bolt-action rifles and pigeon messages. On the other hand, the traditional trappings of the soldier need not be sacrificed for the spurious expediency of progress or change for change's sake. To go out on a limb, what's wrong with sabers at ceremonies, bugles at formations, and teaching hard, basic self-reliance to recruits? While we're about it, why not restore respect for noncommissioned officers, whose word once more carries weight?

More specifically, and first of all so far as uniforms are concerned (not merely tradition, but practicality prompts some recommendations):

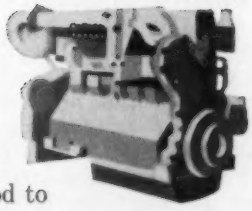
Why not return the choke collar for dress blues and dress whites? The choke collar is traditional, military, handsome and comfortable. Obviously it eliminated the need for a shirt and a tie. Certainly the appearance of Marine Corps and Navy officers and of West Point cadets in choke-collar whites is far more impressive and more military than that of Army officers in whites.

Why not replace the white vest of the blue mess uniform with the black cummerbund which is now optional with white mess? Army Regulations prescribe a waistcoat with rounded bottom with blue mess and a vest with points for evening dress. (Some tailors will tell you the white waistcoat with rounded bottom is a waiter's vest and they wouldn't be caught making one.) If we can't have the cummerbund (or at least the option) with blue mess, at least eliminate the need for two different white vests by dropping the one with rounded bottom.

Why not restore the saber at ceremonies, guard duty, parades, and the like? Granted, the saber won't see combat (when was it last used in a cavalry charge, anyway?), but neither do we have guard mounts or ceremonies during combat. Combat is an entirely different arena. The saber is the traditional symbol of military authority.

Why not require all officers to own and wear white dress, and white and blue mess, that can be purchased from post exchange stocks at reasonable prices? (I know one tailor who charges $84 for a blue mess

Capability in Power and Mobility for defense



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jacket without sleeve ornamentation or shoulder knots!)

So far as ceremonies are concerned, why should the Army not have a birthday celebration similar to that of the Marine Corps? It should be held on 15 June wherever in the world soldiers are stationed, and include National Guard and USAR units. The traditions of the Army and of the soldier's unit should be extolled. The proud heritage of the Army and the units' heroes should be recalled. The prescribed ceremony should be conducted with dignity, pomp and formality. The ritual, honors, formations, uniforms, and guests should be listed in regulations so that the ceremony would be uniform throughout the world. It should evoke the same kind of response that alumni get when they hold reunions at their alma maters. It should be an annual occasion, when officers and their men rekindle spirits, strengthen their esprit, and in so doing strengthen themselves and thereby the United States.

If these are somewhat unprogressive ideas in an age when science and technology play such a prominent part in our lives, then so be it. Professional soldiers are not civilians. Army units are not subsidiaries of General Motors. Soldiers cannot strike for higher wages and shorter hours. They don't shirk hazardous duty, or avoid combat duty. Why should the life and customs of the soldier and his garb be likened to the habits and apparel of the civilian? Must we apologize to Congressmen or mothers when we train constituents and sons to become hard, winning soldiers who know how to keep alive in battle? Must we apologize for wearing uniforms that look like uniforms and carry sabers we will never draw in battle? Why worry about criticism of our way of life? We need apologize only for those things which lessen our soldiers' chances for survival, which fail to harden them to the rigors of field service, which do not prepare them for the shock of combat.

The soldiers of an outfit armed with the Corporal missile may do a better job if they are constantly reminded that one night their predecessors fired 6,000 highly effective rounds to help stop a penetration in Chorwon Valley, while at the same time they fought off Communist infiltrators with small arms; an officer armed with a saber may be just a bit more military in carrying out his duties at a ceremony or a parade.

Let us therefore not conceal our splendid history and cherished traditions under the cloak of conformity.

TRAIN THEM TO LEAD PLATOONS. *A scheme for improving the ROTC product by putting him to work as a lieutenant before graduation*

Capt. E. LLOYD MURPHY

Being an ROTC graduate, I would be among the first to agree with the consensus that initially (say for six months or so), ROTC officers are not on a par with the products of OCS and USMA. This is not a fault of the officer, but of the system.

Basically, I'd say that less than ten per cent of our ROTC officers have a true concept of what is expected of them. Many of them have never seen at first hand how a lieutenant performs his duties, nor do they appreciate his responsibilities, his prestige, and his importance.

No amount of classroom teaching can paint the picture he needs. During four years of college and six weeks at summer camp he can probably count on the fingers of one hand the number of lieutenants he has seen at work. His instructors are captains or field grade officers, or they are senior noncommissioned officers. Quite often, unintentionally, these instructors tend to devaluate the importance of a lieutenant while attempting to magnify their own in the cadet's eyes. Often they mention their own former lieutenants as though they were either puppets guided by the platoon sergeant, or complete fools.

At summer camp does the cadet have a captain or senior lieutenant for his company commander, or a lieutenant for his platoon leader? No; usually his company commander is a lieutenant colonel. More often than not his platoon leader is a captain. Is this a valid picture of his own future on active service?

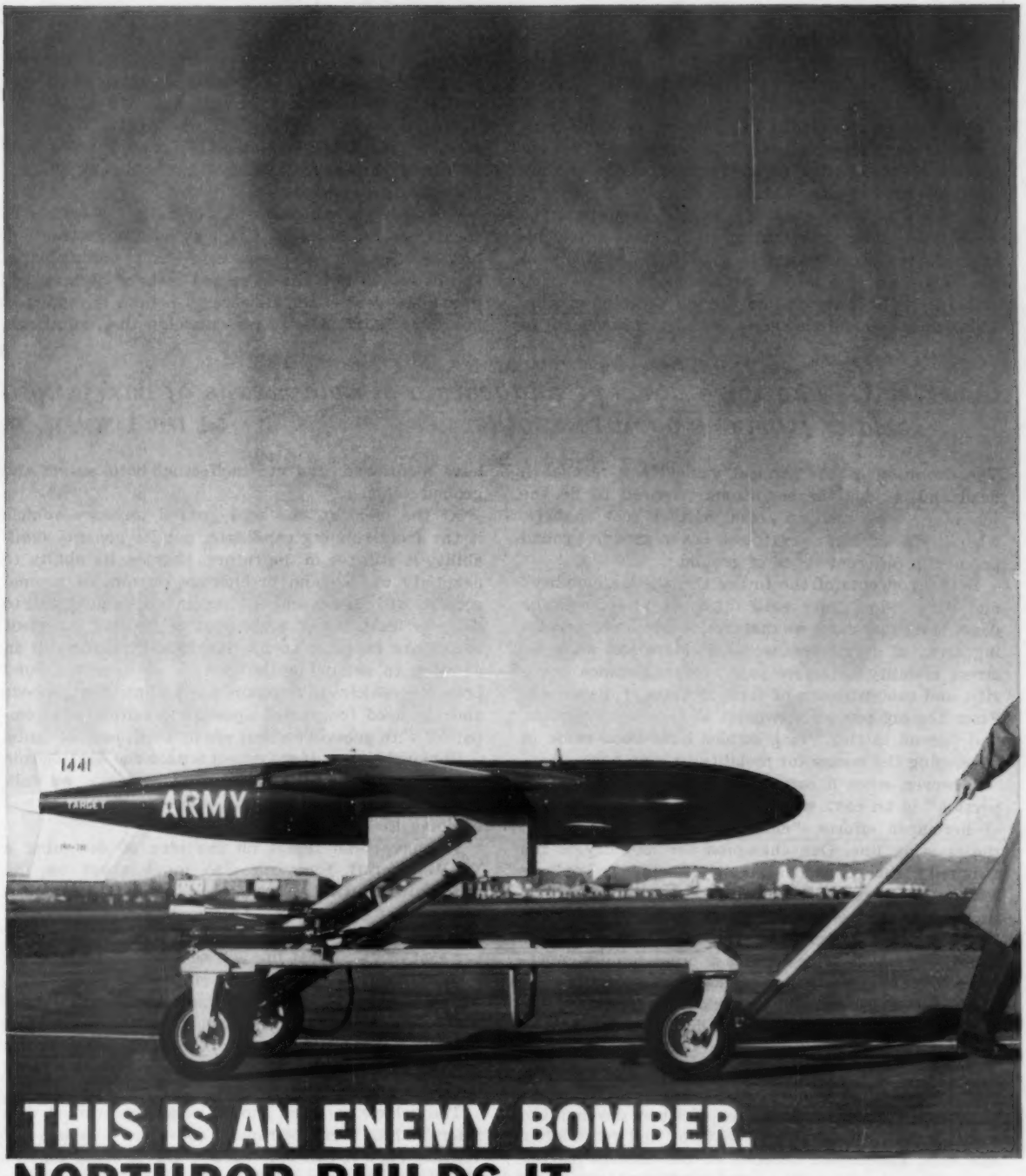
I offer a solution, based on my experience of three years as assistant PMS, ROTC summer camps at three different posts, and nearly two years as a company commander in basic training.

Extend summer camp from six to eight weeks. Compress the current six-week program into four weeks, stressing throughout the practical application of three years of classroom work. During the next four weeks, assign cadets to basic training companies as platoon leaders, with all the responsibilities and privileges. They need not wear insignia of rank but would be addressed as Mister and rate a salute from basic trainees.

If necessary, to accommodate larger numbers, the cadet could spend two weeks as a principal instructor on a committee, and then rotate for two weeks as a platoon leader. Company commanders and committee chiefs would rate cadets on special ROTC rating forms. ROTC tactical officers could float about as observers, checking the cadets of their own schools. These two additional and very valuable ratings would be of tremendous assistance to the PMS at the start of the senior year, in deciding on retention in the program, cadet corps appointments, designation of distinguished military students (DMS), branch recommendations, and so on.

To work with basic trainees the cadet has had most of the training necessary: weapons, leadership, principles of instruction, and other necessary background. So far he hasn't had tactics higher than the platoon, company administration and other related subjects. These come during his senior year, and are not prerequisites for working with basic trainees.

Several years ago a similar program was tried with USMA cadets during the summer following their third year. They were assigned to basic training companies as platoon leaders for three or four weeks, were addressed as Mister, rated salutes, and instructed both from platform and at drill. From my observations at



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the time as a company officer, their use in these jobs greatly assisted the commander of the basic training company.

The many gains should be apparent. Now we have a workable method of observing potential platoon leaders and a basis for eliminating the obviously unfit. We have the finest possible practical application for future officers—that of actually performing as lieutenants. Most important of all is the definitely increased confidence gained by the ROTC officer, who knows he can step into a platoon leader's slot when called to active duty and do the job expected of him. This scheme should also see a definite improvement in campus training, where senior cadets are a vital element in running the cadet corps and teaching drill and leadership to juniors. I firmly believe we will see an increased rate of application for Regular Army careers by our better-qualified DMS cadets after they have seen first-hand the important role they will act after being commissioned.

Certainly we will have to work out the details of such a system, including new programs of instruction, how to fit in summer camps near basic training units, and how to absorb the increased costs of eight weeks over a six-week camp. However, I believe the gains in improved ROTC officers far outweigh the limitations.

GYRO-MOBILE. *The gyro concept suggests a simple means of carrying a soldier from one point to another*

Col. FRED L. WALKER, JR.

The evolution of the tactical vehicle has reached a dead end. Under the conditions required to do the job in forward combat areas, neither foot soldiers, wheels, tracks, nor aircraft can cover enough ground or enough different types of ground.

In our concepts of the future the words "mobility" and "dispersion" race each other up and down the page. More and more we disperse to avoid an increasing array of destructive weapons. More and more we stress mobility to insure rapid reconnaissance, security, and concentration of force in spite of dispersion. From the big picture viewpoint of strategy, logistics, and "grand tactics," long strides have been made in developing the means for mobility to keep pace.

However, when it comes to small-unit tactics, "dispersion" is an easy winner in the race; for in spite of herculean efforts, "mobility" has hardly crossed the starting line. Our champion for mobility is the armored, tracked vehicle: fairly mobile in only a few restricted terrain localities, but highly vulnerable to detection and aimed fires, and with a logistics tail like a whale. Runner-up is the wheeled vehicle: inferior to armor in some aspects of cross-country movement though superior in other aspects.

Between the two, vehicular movement is still confined largely to road nets, with limited maneuver off the road at points of enemy contact *when the terrain is favorable*. Neither tracked nor wheeled vehicles have sufficient speed or armor protection to offset the effect of aimed, direct-fire weapons. Neither develop the speed or have the ability to traverse and reconnoiter the vast, unoccupied reaches of the modern battlefield. When soldiers leave the roads and the open, gently rolling terrain behind, mobility is still measured in the shanks' mare rate of one to two miles an hour or less.

Candidates are being developed to fill the gap, but so far none appears likely to do the job satisfactorily, or soon. Helicopters and convertiplanes are highly developed and will move over and land on any type of terrain, but they are expensive, require highly skilled pilots, and on the ground they cannot fill the bill as general-purpose tactical vehicles for small infantry and armored units. So far, efforts to compromise and come up with a flying jeep have resulted only in producing test beds which have all the disadvantages we have mentioned, and are ineffectual both as air and ground vehicles.

At the moment, the zero ground pressure vehicle is the front-running candidate, but its general availability is still far in the future. Besides, its ability to negotiate uneven and precipitous terrain, or ground covered with brush and tall vegetation, is doubtful, to say the least. Some models, after gaining sufficient speed, are expected to fly like fixed-wing aircraft in addition to skimming the surface as a zero ground pressure vehicle. Here again we run into high speeds and the need for skilled operators; neither are compatible with general tactical use by small combat units.

Obviously, then, if we expect within the next decade to achieve the small-unit tactical mobility we talk about, we will have to find an easy and simple method of doing the job.

We have been intent on the idea of designing a VTOL aircraft that can also move about on the ground, when what we really need is a mobile ground vehicle that can also fly. As a matter of fact, it does not have to fly too well or too far, because at least 95 per cent of its combat life will be spent on the ground. It is only necessary that, intermittently, it be capable of low altitude, a low rate of speed, and short-range flight to traverse natural and man-made obstacles and broken terrain. It should be able to take off and land in shoulder-high vegetation covering small open patches of unprepared terrain.

The vehicle we need should be so constructed that after landing it can be rapidly converted to a wheeled vehicle. Then it can immediately travel along narrow roads and trails and through gaps between high brush and trees. Also, it must take advantage of natural cover and concealment in the same way as other ground tactical vehicles. The operator's degree of skill need approximate only that of a tank driver. Since primarily this vehicle will use wheels on the ground, it should be designed for maximum performance and efficiency in that role, sacrificing efficiency and performance during its secondary and occasional air movements.

The bird we are looking for is more a quail than a hawk: a high-performance automobile that can also flit through the air, not a high-performance aircraft that takes only short, limited steps on the ground.

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During combat, today's dismounted soldier cannot traverse some types of terrain at all; under favorable conditions he can move across country at a maximum speed of only one or two miles an hour. If we mount him in a vehicle that can negotiate any type of terrain, thereby increasing his mobility by an appreciable extent, his job will be made easier. A speed in flight of 30 miles or even less an hour would be adequate, and would radically increase the speed of deployment of small tactical units.

This vehicle need not be an aerial acrobat and it need not be capable of hovering. All we want it to do is take off, follow a simple route from point A to point B, and land.

If we stick closely to these simple, concrete objectives and avoid extensive aerodynamic diversions, we may arrive at a solution through a judicious application of the gyroplane principle. We could equip a tactical vehicle with a detachable or retractable gyroplane shaft, install a rocket assist for almost-vertical take-off and landing, and obtain thrust through a driving propeller geared to the vehicle's engine.

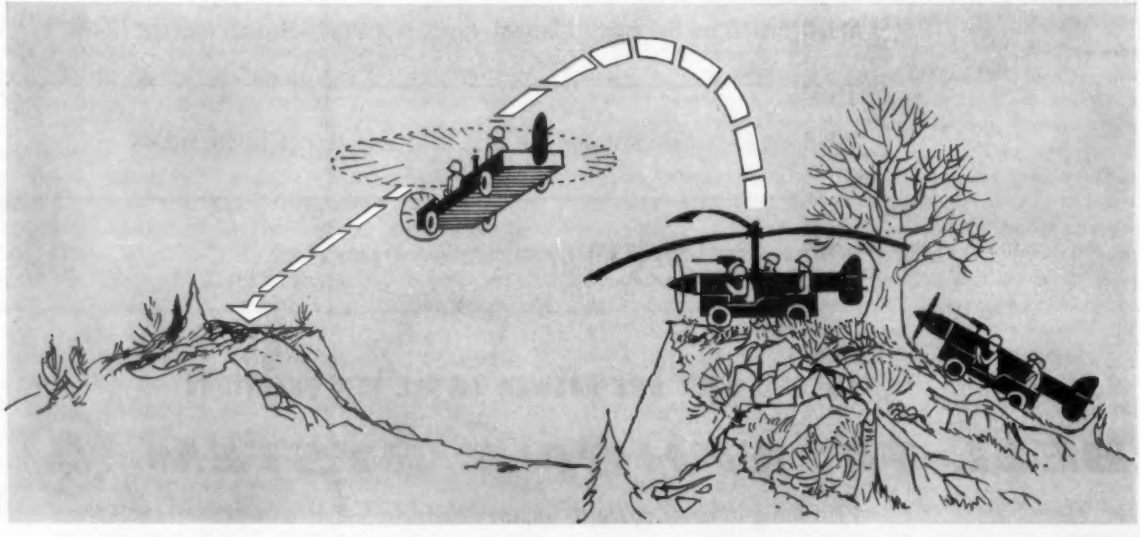
There is nothing novel about the gyroplane idea. That is probably one reason it has been overlooked in the general rush toward aerodynamic breakthroughs. Invented in Spain 40 years ago, and marketed under the trade name Autogiro, the gyroplane can fly at a very low speed (about 30 miles an hour). Having a very steep glide path, it can rise and descend vertically when headed into a very mild wind, and it can land on and take off from very small spaces. Some years ago a small commercial gyroplane was built and tested in the United States as a combination aircraft and automobile. Its blades could be folded back so that it could be driven like an automobile down any highway. In fact, a small build-it-yourself gyroplane is now available in the United States. The fact that problems of torque and stall-out are greatly reduced in this type of aircraft indicates that the operator needs less skill than the pilot of a helicopter.

To produce this ugly but versatile hybrid we need only four basic parts, none requiring basically new engineering development:

- A standard jeep, lightened by substituting lightweight metals or plastics and driven by an air-cooled engine of standard design.
- A detachable or retractable gyroplane propeller with folding blades, provided with a protective cover when not in use. The shaft of the propeller blades could be erected and retracted either mechanically or manually.
- A rocket assist mechanism consisting of propulsion jets at the ends of the blades, powered through the hollow blades and stem by exhaust gases from a detachable bottle. This rocket bottle would be a big brother to similar units used in the paratrooper's jump belt.
- A conventional aircraft propeller geared to and driven in flight by the jeep's engine.

When possible, take-off would be accomplished in the conventional manner by erecting the gyroplane and using a smooth patch of road or open ground as an unprepared airstrip. No rocket power would be needed. Upon attaining speed, the gyro-jeep would take off much as a fixed-wing aircraft does, except that it could do so with a shorter run and lower speed. By heading into a mild wind, it could rise almost vertically. However, when the going gets rough, the rocket-assist bottles come into play.

The sketch illustrates a tactical movement by the gyro-jeep. From the right our vehicle approaches the top of a hill strewn with ruts, stumps, and brush. The gyroplane blades are mounted and the propeller geared in and gunned to flying speed. When the rocket bottle is fired, the gyroplane, acting momentarily as a helicopter's rotors, raises the vehicle 20 to 30 feet and sustains it during the brief interval required to gain flight speed. Rocket power is then switched off and the gyroplane prop rotates normally. Descent is made vertically among the ruts, stumps, and brush of another hill-top, mechanical operations having been reversed.



Hill-to-hill gyro-mobile flexes its gyro-blades and takes off for yonder level ground.

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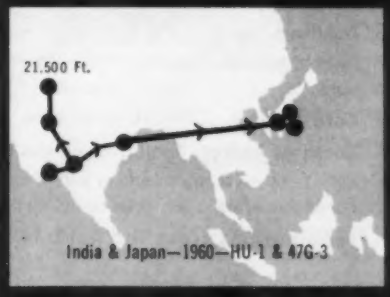
MISSION BELL ACCOMPLISHED



Obviously, certain problems relating to torque compensation, load balance, blade adjustment during take-off and landing under power, and others remain to be solved. These do not appear insurmountable.

From the airman's viewpoint of aerodynamics and design, what we will have would be a contraption capable of only the most clumsy, inefficient aerial performance. But if we insist on a perfect flight system, it will entail years of development, more years for production, and time for training skilled pilots. In the meantime, the ground combat soldier will benefit little from all this planning. He will still be tied to the ground.

The viewpoint of most importance is that of the fighting soldier who needs a simple means of carrying him from one point to another, over any type of terrain, on or off roads. He needs it now. A vehicle such as the gyro-jeep, using standard components which can be readily mass-produced, can give him the mobility he needs. He must have a low-performance, easy-to-operate machine which he can quickly learn to handle. It should impose little additional load on our fuel resupply system. With it the soldier could easily surmount any battlefield obstacle so as to outmaneuver the enemy when that becomes necessary. Then tactical mobility would be a fact instead of a good intention.

ELECTION OF OFFICERS AND TRUSTEES

For term beginning June 1961

VOTING INFORMATION

1. **Procedure.** Published in November 1960 and January 1961 President's Letter.
2. **Who may vote.** Each General, Service and Associate Member may submit one ballot only.
3. **Mailing.** Send to the Secretary, AUSA. Mark envelope or package "Ballot" in lower left corner. More than one ballot may be sent in one envelope or package but each ballot must be signed by the individual voter.
4. **Late voting.** Ballots received after 1 May will not be counted.
5. **Form of ballot.** The ballot on this page is the official ballot. Those desiring not to mutilate their copy of ARMY may use a facsimile, but it is required that if facsimile is used the address block be filled in with complete information appearing on the address label or envelope including code numbers.
6. **Nominations from the field.** None received for 1961 elections.

THE CANDIDATES

Milton G. Baker. Trustee AUSA since reorganization in 1956; Superintendent, Valley Forge Military Academy; Lt. Gen. Pa. Nat. Guard (Ret.). For reelection. Wayne, Pa.

Karl R. Bendetsen. Trustee AUSA since June 1959; Lawyer, corporation consultant; President Champion Paper and Fibre Co.; Col. USAR; Assistant Sec/Army 1950-52; Under Sec/Army 1952. For reelection. Hamilton, Ohio.

Jacob L. Devers. General, U. S. Army (Ret.); Chairman, American Battle Monuments Commission; Trustee since June 1958. For reelection. Washington, D. C.

John E. Hull. General, U. S. Army (Ret.); President, Manufacturing Chemists Association, Inc.; Trustee since reorganization in 1956. For reelection. Washington, D. C.

Charles S. Stevenson. Retired Vice President, Hallmark Cards, Inc.; Organizer of Henry Leavenworth Chapter; Contributor to ARMY; Prominent civic leader; Civilian Aide to Sec/Army. Kansas City, Mo.

Stanley Hiller, Jr. President, Hiller Helicopters; Member of Advisory Board of Directors, AUSA, since reorganization in 1956. Atherton, Calif.

OFFICIAL BALLOT

For President:

Milton G. Baker ☐

For Vice President:

Karl R. Bendetsen ☐

For Council of Trustees (vote for four):

Jacob L. Devers ☐

John E. Hull ☐

Charles S. Stevenson ☐

Stanley Hiller, Jr. ☐

I am a General, Service or Associate Member of AUSA.

Signature .....

Name Printed .....

Address .....

.....

.....

ARMY authors

LT. COL. CHARLES F. AUSTIN (page 33), who recently transferred from Finance Corps to Infantry, served five years on the faculty of the Army Management School. He has served as instructor in executive development programs of several government departments, universities, and associations. He is presently Executive Officer of the 1st Battle Group, 11th Infantry, at Fort Benning.

H. CLAY JOHNSON, JR. is with the Missile and Space Vehicle Department of General Electric, and is a lieutenant, USNR. His primary long-term assignments have been in systems engineering of Lacrosse nuclear arming and fuzing system, and inertial surveying system.

LT. COL. RICHARD N. ROLLASON, AUS, retired (page 46) was a technical sergeant before being commissioned in the Ordnance Department in 1942. He commanded ordnance ammunition and maintenance units in Assam and Burma, was on the faculty of the Ordnance School, and in the Office of the Chief of Ordnance was deputy chief of the Military Organization and Training Branch and of the Field Service Division.

BRIG. GEN. BENJAMIN H. POCHYLA (page 55), is Commanding General, U.S. Army Signal Training Center at Fort Gordon, Ga. In 1941 he came on active duty as a captain from the Army Reserve and served on the staff of Third Army, in the War Plans Division, and at GHQ, Southwest Pacific Theater. Subsequently he has been on staff assignments in the Pacific, in Europe, on the General Staff, and in the Office of the Chief Signal Officer.

COL. PHILIP MCC. BOYD, British Army (page 60) served as an enlisted man in the Royal Artillery with the BEF in 1939 and returned by way of Dunkerque in 1940. Shortly afterwards he was commissioned in the Royal Artillery and served with the British Eighth Army in North Africa, Greece, and Italy. When he wrote his article he was attached to the staff of a large U.S. headquarters in Germany.

MAJ. GEN. HAROLD W. BLAKELEY, retired (page 62), who has written many articles and reviews for ARMY, landed in Normandy as assistant division commander of the 4th Infantry Division and became division commander in December 1944. He retired in 1946.

CAPT. E. LLOYD MURPHY, Infantry (page 66) is a Distinguished Military Graduate of Oklahoma A&M College, and served three years on ROTC duty at Texas Christian University. He is now assigned to a training regiment at Fort Jackson, S.C.

COL. FRED L. WALKER, JR., Infantry (page 68) has written several articles for ARMY and *Infantry Journal*. He is particularly interested in future methods of warfare, and served in the Office of Research and Development, War Department General Staff. He is now with the Combat Development Experimentation Center at Fort Ord. While Colonel Walker's article was being prepared for publication, the Associated Press announced that a patent had been granted for a truck that can "retract its wheels and 'fly' along just above the road."

CAPT. MORRIS J. HERBERT, Artillery (page 74), is a 1950 graduate of West Point who earned a Master's degree in mechanical engineering from the University of Southern California. He is now executive officer for the assistant chief of staff, R&D, Army Ordnance Missile Command.

There was one error and one omission in the Authors' page of our February issue. We failed to include LT. COL. WILLIAM GARDNER BELL, Armor (*"Petrita's* Command Reconnaissance"), a former editor of *Armor* Magazine whose writings have appeared in *Encyclopedia Americana* and many periodicals as well as ARMY. Colonel Bell is Assistant Chief of the Histories Division in the Office of the Chief of Military History. Our blooper identified CAPT. TREVOR W. SWETT, JR., as a member of the Combat Development Experimentation Center. Captain Swett then was living at Fort Ord, but was attending the Army Language School. Soon he will join the U.S. Army Mission to El Salvador.

Inaugural Address

(Continued from page 18)

terrors. Together let us explore the stars, conquer the deserts, eradicate disease, tap the ocean depths and encourage the arts and commerce.

Let both sides unite to heed in all corners of the earth the command of Isaiah—to "undo the heavy burdens . . . [and] let the oppressed go free."

And if a beach-head of cooperation may push back the jungles of suspicion, let both sides join in creating a new endeavor, not a new balance of power, but a new world of law, where the strong are just and the weak secure and the peace preserved.

All this will not be finished in the first 100 days. Nor will it be finished in the first 1,000 days, nor in the life of this Administration, nor even perhaps in our lifetime on this planet. But let us begin.

In your hands my fellow citizens, more than mine, will rest the final success or failure of our course. Since this country was founded, each generation of Americans has been summoned to give testimony to its national loyalty. The graves of young Americans who answered the call to service surround the globe.

Now the trumpet summons us again—not as a call to bear arms, though arms we need—not as a call to battle, though embattled we are—but a call to bear the burden of a long twilight struggle year in and year out, "rejoicing in hope, patient in tribulation"—a struggle against the common enemies of man: tyranny, poverty, disease and war itself.

Can we forge against these enemies a grand and global alliance, north and south, east and west, that can assure a more fruitful life for all mankind? Will you join in that historic effort?

In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. I do not shrink from this responsibility—I welcome it. I do not believe that any of us would exchange places with any other people or any other generation. The energy, the faith, the devotion which we bring to this endeavor will light our country and all who serve it—and the glow from that fire can truly light the world.

And so, my fellow Americans: ask not what your country can do for you—ask what you can do for your country.

My fellow citizens of the world: ask not what America will do for you, but what together we can do for the freedom of man.

Finally, whether you are citizens of America or citizens of the world, ask of us here the same high standards of strength and sacrifice which we ask of you. With a good conscience our only sure reward, with history the final judge of our deeds, let us go forth to lead the land we love, asking His blessing and His help, but knowing that here on earth God's work must truly be our own.

ARMY irons in the fire

RESEARCH, THEN DEVELOPMENT

Costs accumulate and slippages occur when weapons systems research falls behind development

Capt. M. J. HERBERT

The announcement last August by the Secretary of the Army that the Chief of Research and Development will have increased authoritative direction and control over all research and development functions and installations reemphasizes the importance of both basic and supporting research in our over-all planning for future weapons systems.

New equipment and weapons in the field are visible evidence of the end result of research, but the combat soldier, in his preoccupation with the finished product, often overlooks the Army's need for a strong research effort. An orderly program of weapons system development depends on a solid background of basic and supporting research. While most of us have a general idea of the problems of interest to Army research (increased firepower, better communications, more mobility), we are a little hazy as to what exactly constitutes basic and supporting research, and what price we are paying for them.

The difference between basic and supporting research is very fine. The old saw, "If it's useful, it isn't basic research!" is a clear, if incorrect, definition. Actually, basic research is that portion of scientific investigation which delves into new and uncharted areas, advancing man's knowledge and pushing back the frontiers of science; the results it achieves are unprogrammed and in general are not predictable in advance. Basic research is undertaken because someone is puzzled, because someone is curious, because someone wants to know why.

Supporting, or applied, research follows a planned program that aims at achieving a particular, identifiable end product. Supporting research bridges basic research with the useful application of a principle to a specific system. Basic research synthesizes the new high-energy compound; supporting research puts the compound to use as a propellant for a guided missile system. Thus, supporting research advances the state of the art, utilizing the results of basic research in many applications: from techniques to devices and components to entire weapons systems.

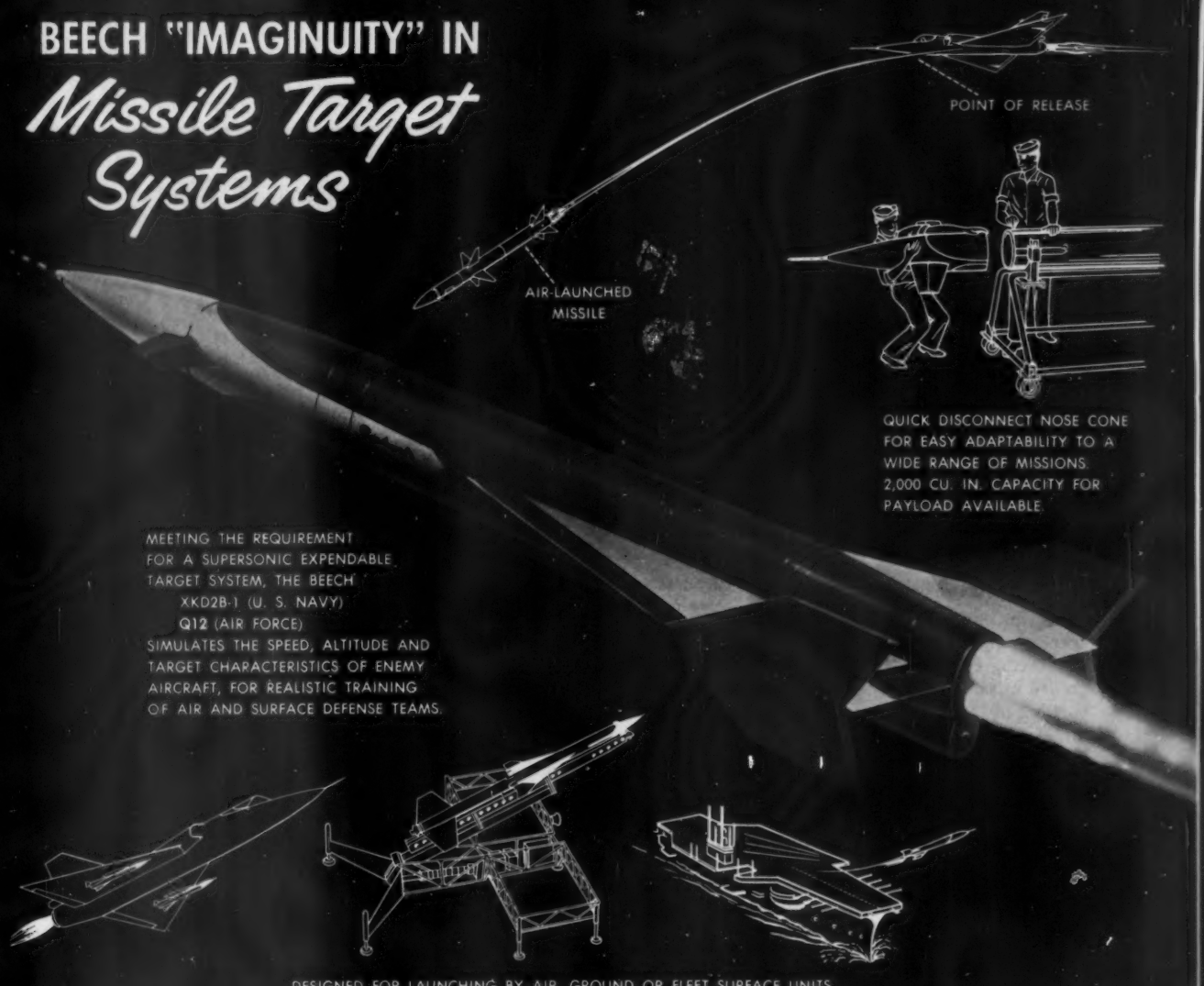
A well-known example of applied research is the micro-miniaturization effort in electronic components. Reduced size means reduced weight, which in turn can be translated into greater firepower in the form of larger missile payloads, or into more mobility in weapons systems that depend upon electronics for their operation. Directly in the field of guided missiles and rockets, supporting research in solid propellants over the past several years at Redstone Arsenal has provided the Army with bonding techniques that permit the fabrication of larger and larger motors with higher and higher energy outputs. These new, more powerful motors can withstand the rigors of changing climatic conditions; they can hold up better under shock and vibration, and are safer to handle—all because of a continuing supporting research program in propellants.

Ideally, supporting research is followed in logical sequence by a program of weapons system development. Unfortunately, in practice the ideal seldom is reached. More often than not, supporting research is funded out of weapon development monies, and is carried out concurrently with development.

Hot cookie. Fourteen-foot cross-section of a solid propellant rocket motor under study by the Redstone Division of Thiokol Chemical Corp., dwarfs average-sized man standing alongside. Envisioned for use by NASA, the motor would be 63 feet long and develop 2.4 million pounds of thrust during a burning time of 82 seconds. Motor is part of the large solid propellant rocket motor design study being conducted for NASA.

A fast azimuth is found by an artilleryman at Fort Sill, Okla., by using the new "ABLE" gyroscopic direction finder now in production for the Army by North American Aviation's Autonetics Division. ABLE cuts time of establishing a base line down to minutes.

BEECH "IMAGINUITY" IN *Missile Target Systems*


POINT OF RELEASE
AIR-LAUNCHED MISSILE
QUICK DISCONNECT NOSE CONE FOR EASY ADAPTABILITY TO A WIDE RANGE OF MISSIONS. 2,000 CU. IN. CAPACITY FOR PAYLOAD AVAILABLE.
MEETING THE REQUIREMENT FOR A SUPERSONIC EXPENDABLE TARGET SYSTEM, THE BEECH XKD2B-1 (U. S. NAVY) Q12 (AIR FORCE) SIMULATES THE SPEED, ALTITUDE AND TARGET CHARACTERISTICS OF ENEMY AIRCRAFT, FOR REALISTIC TRAINING OF AIR AND SURFACE DEFENSE TEAMS.
DESIGNED FOR LAUNCHING BY AIR, GROUND OR FLEET SURFACE UNITS.

Beech XKD2B-1/Q12: Winner of Navy/Air Force design competition . . .

Mach 2 target system for realistic training born of Beech cryogenic + airframe experience

Designed to simulate the speed, altitude and target characteristics of enemy aircraft, the Beech XKD2B-1/Q12 makes possible effective testing of advanced weapons systems and provides realistic training—at low cost—of air, ground and fleet defense units. Into its development has gone more than 6 years of Beech experience in cryogenics, plus over 27 years of airframe know-how. With its pre-programmed guidance system, it operates at altitudes from 1,000 to 70,000 feet and at speeds up to Mach 2. Adaptable for use with Nike, Terrier and Talos launchers, the target system has promising potential for economical development as a missile system. It can carry a substantial payload, to fulfill a wide range of future missions.

Beech *Aerospace Division*

BEECH AIRCRAFT CORPORATION • WICHITA 1, KANSAS.

Beech Aerospace Division projects include R&D on manned aircraft; missile target and reconnaissance systems; complete missile systems; electronic guidance systems; programs pertaining to liquid hydrogen propellants and cryogenic tankage systems; environmental testing of missile systems and components; and GSE.

May we help you? Write, wire, or phone Contract Administrator, Beech Aircraft Corp., Wichita 1, Kansas—or nearest Area Office.

IRONS IN THE FIRE

The difficulty of conducting supporting research concurrently with system development is that research doesn't always conform to development time schedules. Research can't be rushed. So, while supporting research effort goes forward, development schedules may slip, and costs can pile up. The objective of a timely supporting research program (timely: before development of the system begins) is to produce better materiel for less money, with shorter lead times. If the supporting research program can be conducted before development, we can obtain more and better solutions to a given problem. The developer then has the opportunity to choose a best solution.

To this end, each year the Army spends part of its R&D dollar for supporting research. In the field of guided missiles, where the greatest portion of our R&D money goes, the Army Ordnance Missile Command has thus divided its funds over the past few years (expressed in millions of dollars).

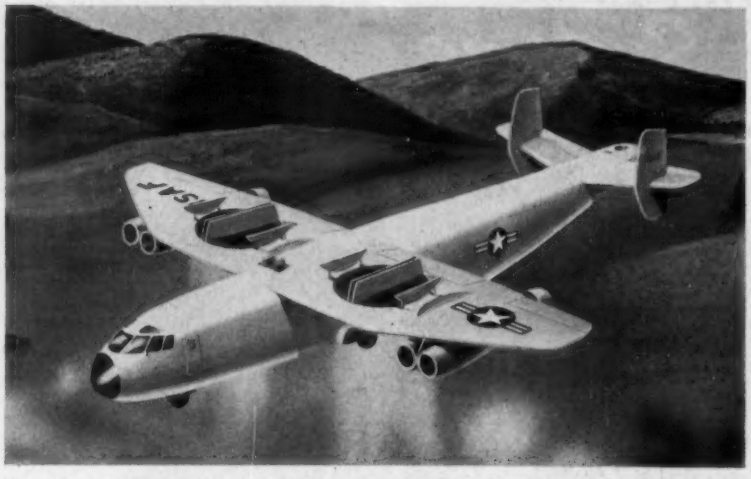
	Total R&D Funding	*Total SR Funding*	*% of R&D Funds devoted to SR*
FY 1958	354	10.74	3.0
FY 1959	480	13.95	2.9
FY 1960	525	13.65	2.6
FY 1961	499	6.83	1.4

Certainly in today's rapidly changing world the need for an effective basic and supporting research program for the Army is greater than ever before. Dr. Wernher von Braun, long a leading member of the Army's missile development team, has seen fit to post this sign in his office: RESEARCH IS LIKE SAVINGS. IF POSTPONED UNTIL NEEDED, IT'S TOO LATE TO START.

VTOL Transport Seen

A vertical take-off and landing aircraft is envisioned as "a practical means of meeting logistic and troop carrier requirements of the military" by Republic Aviation engineers.

The company has revealed its concept of a six-turbojet transport containing two lifting fans in the wings and able to dispense with formal air base conditions to permit its use at "austere" sites typical of advanced positions.



Turbojet troop carrier. An artist's conception of Republic Aviation's newest entry in the troop carrier field. The proposed plane would have vertical take-off and landing capability, enabling it to deliver troops or cargo to unimpoved landing sites in forward areas. Ferrying range is put at 3000 miles.

The turbojets would be General Electric J-85s. Cruising speed is set at 400 mph and maximum speed at 520 mph. The same engines would feed the lifting fans via diverting valves. A Republic engineer explained that VTOL and hover control are achieved through auxiliary jet units mounted on the aft fuselage and wing tips, providing sensitive control against pitch, yaw and roll. On ferry missions, the plane would have a range of 3000 miles.

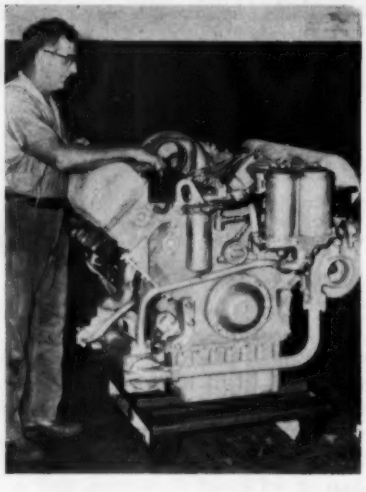
New "Cat" Engine

A new diesel engine, weighing less than five pounds per horsepower, has been developed for Army Ordnance by the Caterpillar Tractor Company of Peoria, Ill. Conventional diesel engines weigh eight to 15 pounds per horsepower.

Designed specifically for combat vehicles, the compact engine opens new possibilities for many other military applications requiring compression-ignition power in limited space, such as air-droppable electric sets and marine craft.

The engine was developed under a contract with the Chicago Ordnance District as part of the Army's current program aimed at "dieselizing" combat vehicles. The contract called for specific weight and space limitations and horsepower requirements. As a result, high-strength aluminum alloys were used where feasible, including cylinder heads, blocks, covers and housings.

The engine, which is 48 inches wide, 43 inches high and 52 inches



New concept in compact power. This 580-horsepower compression-ignition, V-type, liquid cooled engine weighing less than five pounds per horsepower has been developed for Army Ordnance by the Caterpillar Tractor Company.

long, is designed to operate on a wide range of compression-ignition fuels in temperatures from minus 65 to plus 125 degrees Fahrenheit. It will operate on slopes up to 60 per cent, at altitudes up to 8,000 feet above sea level and under water when equipped with suitable breathing apparatus.

Caterpillar has announced that four pilot models have been delivered to the Ordnance Tank-Automotive Command for field testing under arctic and desert conditions.

In the first aerial pickup of cargo from a ship hold, a Sikorsky S-60 Skycrane lifts an Army cargo container from ship to a truck on the beach in less than two minutes. Demonstration was at Fort Story, Va. Skycrane is capable of lifting five tons and carries its cargo externally for rapid pickup and delivery. Method also eliminates stowage of cargo in cabin interiors.

Class Altitude Record

The new world's altitude record for a plane of its class, set last September by an Aero Commander, has been verified by the Federation Aeronatique Internationale, governing authority for all such records. Miss Jerrie Cobb was pilot.

Miss Cobb had reported the altitude as 37,010 feet and the official statement, made by the FAI based on calibrations of the Bureau of Standards, was only 68 feet lower, making the official world's record in this class 11,257 meters or 36,932 feet.

This verification brings to a total of four world records set by Aero Commanders with Miss Cobb as pilot. They are: non-stop distance, speed over a 2,000 kilometer closed course (1242.7 miles) and two records for altitude. The distance and first altitude records were formerly held by the USSR, set by Russian military pilots in Yak-II aircraft.

Fast Azimuth Finder

Able to operate in any weather, day or night, a new direction finder for artillerymen is called "ABLE," for Autonetics Base Line Equipment.

Under an Army contract, Autonetics Division of North American Aviation will produce 100 units of ABLE. Simplicity of operation and maintenance are two important features of the new equipment which requires only minutes to establish a directional reference for emplacing artillery pieces. By contrast, such base lines have sometimes required hours or days to establish by conventional surveying methods.

ABLE is basically a precision gyrocompass which determines true north to less than 30 seconds of arc standard deviation, in less than 20 minutes operating time. An Autonetics spokesman said that ABLE operation requires no formal training and only a few minutes of orientation.

New Mask Delivered

The Army is now receiving the new M17 gas mask in quantity under a $6 million contract awarded by the Chemical Corps to Firestone Tire and Rubber Company.

The M17, which represents the first major change in mask evolution in 14 years, eliminates the canister and hose. Newly-developed lightweight filter materials are enclosed within cavities moulded into the rubber facepiece.

hot sparks

A new magneto for light aircraft has been announced by the Scintilla division of Bendix Corp. Said to deliver "a shower of sparks" at the spark plug, the magneto will permit easier starting and smoother running of four- and six-cylinder engines. The new S-200 system, claimed to accomplish quicker, surer starting through a new concept in high-tension ignition for aircraft, is being installed in 80 per cent of all new U. S. built business and private aircraft, Bendix officials said.

Kaiser Fleetwings, Inc., an affiliate of Kaiser Industries Corp., and Doman Helicopters, Inc., have reached an agreement under which the Kaiser outfit will submit a proposal for a new Army helicopter. The new four-place ship is based on design work previously completed by Doman under an Army contract which explored the operational requirements of the ideal light observation 'copter.

General Electric Company has set up a ground support organization to market electrical ground support systems for aircraft, missiles and communications. Among the ground power equipment being supplied by GE is that for the Pershing, Sergeant, Thor and Atlas missile programs.

A new power monitor, for use in L-20A and U-1A aircraft, H-19 and H-34 helicopters as well as in varied portable and shop-based applications, has been completed by the Hycon Manufacturing Co., Pasadena, Calif. The monitor is actually a small portable test bench for check-out and laboratory use. Line loss to electronic equipment can be checked quickly and accurately with the monitor, advising the operator whether the fault lies in the power supply or the equipment being tested. The company says that the monitor is completely "ruggedized" for field use.

ARMY books

THE ARMY IN THE MARIANAS

UNITED STATES ARMY IN WORLD WAR II. Campaign in the Marianas. Philip A. Crowl. Office of Chief of Military History. 505 Pages; Illustrated; Maps; Index; $6.50.

Reviewed by

BRIG. GEN. EDWIN H. RANDLE, who was Assistant Division Commander, 77th Infantry Division, during the operations narrated in this volume.

This, the fiftieth volume in the Army's history of World War II, tells the story of the Army's part on Saipan, Tinian, and Guam. The Marine Corps has already published *The Recapture of Guam* and similar accounts of Saipan and Tinian. But the Army's volume encompasses the entire Marianas operation. I would rate it a more scholarly achievement, though I have no quarrel with the Marine Corps account of Guam.

Some readers will be absorbed by the bitterest interservice controversy of World War II: the Smith-versus-Smith affair. It was pretty well aired some years ago in *The Saturday Evening Post* and in *Infantry Journal,* as well as in the history of the 27th Division. It had now best be forgotten. Dr. Crowl devotes to it only a short, seven-page chapter. When every minute of the day youngsters are heroically dying, quarrels between generals are not too important. Who remembers the one between Fitz-John Porter and Pope? Chapter X points out that there were mistakes in judgment by both services and pretty much lets it go at that.

Smith-versus-Smith did have a psychological effect during the Guam operation. Marine General Holland M. Smith, who was in overall command, his staff, and all the marines treated the 77th Infantry Division, the Army's major unit on Guam, with utmost consideration (except during their initial landing) and camaraderie. But then no one had cause to complain of the lack of aggressiveness of that outfit, or of its commander, Maj. Gen. A. D. Bruce.

The Marianas campaign was important for several reasons, mainly national pride. It brought Guam and its loyal Chamorros back under the Stars and Stripes. Far more important, it set the stage for the massive B-29 raids on the Japanese homeland. Flying from five airfields built with almost miraculous rapidity, "Japan's industrial plants were flattened, her shipping was ruined and sunk, and her cities were laid waste." All that was made possible by the soldiers and marines who fought and bled and died there, and let us never forget it.

As they waded through red mud, slept in water-filled foxholes, slashed through jungle growth against murderous machine-gun fire, or faced wild banzai charges, none had any conception of the importance of what they were doing except that beating the enemy wherever he could be found was important. But when we saw the Engineers and Seabees following close behind, leveling hills that were small mountains, filling swamps, rooting out jungle, and smoothing out great airfields long before the fighting was over, it made us proud and we wondered whatever possessed those little men to start a war against our mighty military potential; against such men as captured the Marianas and built the great airfields and flew the swarms of planes that won the war without Russian help, without even needing the atomic bomb.

When I hear that U. S. prestige is low, that our strength is slipping, when people are fearful and lose sleep over exaggerated Russian claims, I think of the power I saw there and on Okinawa. We learned in the Marianas, in fact all over the world, that the enemy is never nine feet tall. We must remind our people of that over and over again. American military history is an inspiring and comforting thing.

Like all works turned out by the Office of the Chief of Military History, this volume is plentifully supplied with maps. Besides the sketch maps liberally sprinkled throughout the text, in a cover pocket is a large National Geographic map of the entire Pacific area. Also hinged on the back cover are maps illustrating each phase of every operation on the three islands. There are clear pictures that convey an idea of the terrain on those islands.

GUIDE TO ALL ACADEMIES

CADET BY APPOINTMENT. Lt. Col. Richard Farr. Privately published. 130 Pages; Illustrated; $1.50.

Reviewed by

CAPT. CLINTON E. GRANGER, JR., who is Admissions Officer at West Point.

Today, as never before, the American youth thinks of college and career long before graduating from high school. The much-publicized population explosion, professional guidance counseling, and keen competition for choice colleges have sparked an unprecedented interest.

To a marked degree this awareness is reflected in interest in the service academies, and competition for the limited number of appointments has reached a new high. This is most desirable, for it insures a more than adequate group from which selections may be made. However, it increases the problems for the youngster who seeks a career in the armed forces or the merchant marine.

Here is where Colonel Farr's book serves a most useful purpose. In 130 pages he outlines the various systems of nomination and selection for all four service academies and the Merchant Marine Academy. In addition, he includes basic information on how to earn a Regular commission in the Navy through its ROTC.

This book can help young men (and their parents) decide whether or not the academies offer training and career opportunities best suited

to their individual aspirations. Further, by comparing all academies and NROTC, the young man can determine which course of action best suits his desires.

Following this survey and the decision, one must be mindful of the weaknesses inherent in this type of compilation: the laws and regulations governing admissions change. In addition, curricula are constantly revised, as the academies shift emphasis to provide the best possible training. Here the official publications, such as the catalogs from which Colonel Farr has drawn the bulk of his text, will reflect a more accurate statement of current requirements and procedures. However, in providing a survey of all courses of action, *Cadet by Appointment* is unique, and can be of great value to the potential candidate.

Cadet by Appointment does not pretend to replace the guidance offered by each academy and service, and periodic revisions of most of its basic data will enable a young man to focus his desires and intent on a particular goal, and guide him in the steps necessary for attaining his objective.

PRESIDENTIAL WARTIME POWERS

KOREA AND THE FALL OF MacARTHUR. Trumbull Higgins. Oxford University Press. 229 Pages; Index; $5.00.

THE ULTIMATE DECISION. Ernest R. May, ed. George Braziller. 386 Pages; Index; $6.00.

Reviewed by

MAJ. MARTIN BLUMENSON, who commanded the 3d Historical Team in Korea.

President Truman's relief of General MacArthur has stimulated lengthy and continuing discussion of at least two aspects of that dramatic event: the limited nature of the Korean War and the Constitutional role of the President as Commander in Chief.

Trumbull Higgins has mused long and hard over Truman's unequivocal act. He seeks to explain it by analyzing the forces, issues, and personalities that interacted during the period, mainly by contrasting the currents and cross-currents of concurrent conflicts, controversies, and alternatives: Far East versus European strategy; Democrats versus Republicans; Acheson versus Taft; MacArthur versus the JCS; Chiang versus the American allies in Europe; limited war versus total commitment; crossing the 38th parallel versus the possibility of Chinese intervention; showdown versus containment; and so on.

In going over much of the same ground as John Spanier's recent *The Truman-MacArthur Controversy and the Korean War,* Higgins has probably consulted every secondary source on the subject in the English language. But somehow, despite an occasional neat juxtaposition, the discussion serves to muddle rather than to clarify. There is also some nonsense; for example, the statement, without explanation, that the 38th parallel was firmly based on logistic reality.

If one thing emerges strikingly, and this only inferentially, it is the reader's growing awareness of the tremendous contributions by Kissinger, Osgood, Morgenthau, and others to our strategic thinking in the years since MacArthur's relief. In 1951, understanding of the meaning of limited war and of its differentiation from the search for total victory was appallingly imperfect. Higgins makes this quite evident by abundant quotations from Congressional hearings and other documents.

Ernest R. May is interested in the other aspect of Truman's action: the President as Commander in Chief. In nine essays, he and five others have explored the ways in which our war Presidents have interpreted and carried out their Constitutional role. Professor May contributes an introduction and essays on McKinley, Wilson and Eisenhower. Marcus Cunliffe writes on Madison, the late Leonard D. White discusses Polk, T. Harry Williams writes on Lincoln, William R. Emerson on FDR, and Wilber W. Hoare, Jr., on Truman. All are historians who hold university posts, except Mr. Hoare, a historian in the Department of Defense, and Mr. White, a political scientist.

In contrast with the speculative overcast that hangs about Higgins's book, the approach of May and his associates is decidedly straightforward. All the essays are stimulating, and display a grasp of understanding that makes the

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writing authoritative. They attack their problems by considering the personalities and characters of the men they examine, their chief subordinates, the institutionalized instruments at their disposal, the nature of the war, and the state of the art of strategy at the particular time.

Mr. Hoare, in one of the best essays, sees Mr. Truman as the strongest Commander in Chief in our history, not only because of Truman's personal sense of responsibility but also because of the means of control available to him. His strategy-making subordinates and the organization they staffed operated on the experience gained during World War II, and the men and the institution were able to serve Truman with a cohesiveness not before or since achieved. Mr. White's masterful account of Polk shows how a man of similarly forceful personality lacked the instrument to enforce his will to the same extent during the course of the Mexican War.

The framework established by Dr. May gives this collection of essays a unity and meaning far beyond many jointly authored works. His introduction sets the scene as well as the tone. He contrasts yesterday's and today's methods of determining policy and strategy, and he gives an interpretive account of what the Founding Fathers probably meant in their somewhat vague phrase on the powers of the President as Commander in Chief. Dr. May's final essay on Eisenhower, a brilliant achievement, closes the discussion by asking whether the Constitutional power today is too great for one man to handle. In these days of awful weapons, can a single person make what may be the ultimate decision? Dr. May thinks he can, if he is resolute and energetic. More important, the Constitution says he must.

If one is impelled to understand his age, he must have knowledge of the past. From the parallels he finds, from the precedents and differences he discovers emerge the breadth and depth of understanding that will enable him to see his own times with a balance unmarred by panic or, what is worse, by naivété.

WASHINGTON, D.C., AUGUST 11, 1960 No. 20

AUSA to Emphasize New Army Need

Army Association Discusses Defense

3,500 defense-minded people, including top government

AUSA SPEAKS OUT...

Army Supporters Ask Defense Setup Now

By JERRY GREENE

Washington, Aug. 10 (NEWS Bureau).—More tha members of the Association of the U. S. Arm ed Administration guidelines today and demande nt action now for stronger defenses.

egates to the annual AUSA ntion took note of President hower's message to Con- reporting fresh orders for military spending. Then, in l resolutions, they said this ot nearly enough.

Exhorts Both Parties

resolution specifically told olitical parties to get busy arry out the full sense of

ficient. They said the strateg "does not provide for retaliatio if

Nike-Zeus Backed

The Association of the Uni States Army urged that prod tion of the Nike-Zeus anti-miss missile system "be placed on national crash basis."

A resolution adopted at t

GROUND FORCES' BUILDUP SOUGHT

Army Group Renews Appeal For a 1,000,000-Man Force

es Increase in Funds for Modernization—Lovett Suggests Revamping

By JACK RAYMOND

Special to The New York Times.

ASHINGTON, Aug. 10—

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y. It pointedly opened a se- of resolutions with a refer- to President Eisenhower's rt to Congress Monday of eased Communist trucu- ."

e resolutions were adopted imously by 3,000 delegates e final business meeting of annual convention in the aton Park Hotel. One reso- n was addressed to both

sembly, hasizing outstandi our count Sheraton-

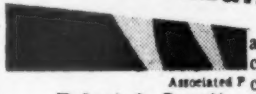
Group Plugs Army's Role

AUSA Convention to Seek Modernization of Ground Forces

WASHINGTON (AP)—The Assn. States Army, con- of a campaign se is a major e drums for a ore money for

gins today it convention wit an expected 0 persons—ir cluding retired high ranking off cers now able to speak out the personal views in a forum d

Vital Need Seen For Quicker U.S. Military Modernization



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Robert A. Lovett

Johnson, Assistant Secret the Army for Logistics.

He said that it would t "minimum procurement bu to dramatize and publicize t

Association Of Army Opens National Mee

WASHINGTON

n effort in speech discussions and ha s.

is a major issue, is beating the The speakers' list includes

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- Immediate lifting of weight and range limitations on Army aircraft and missile systems.
- Placing of NIKE-ZEUS anti-missile missile program on national crash basis.
- Equalization of enlisted retired pay.
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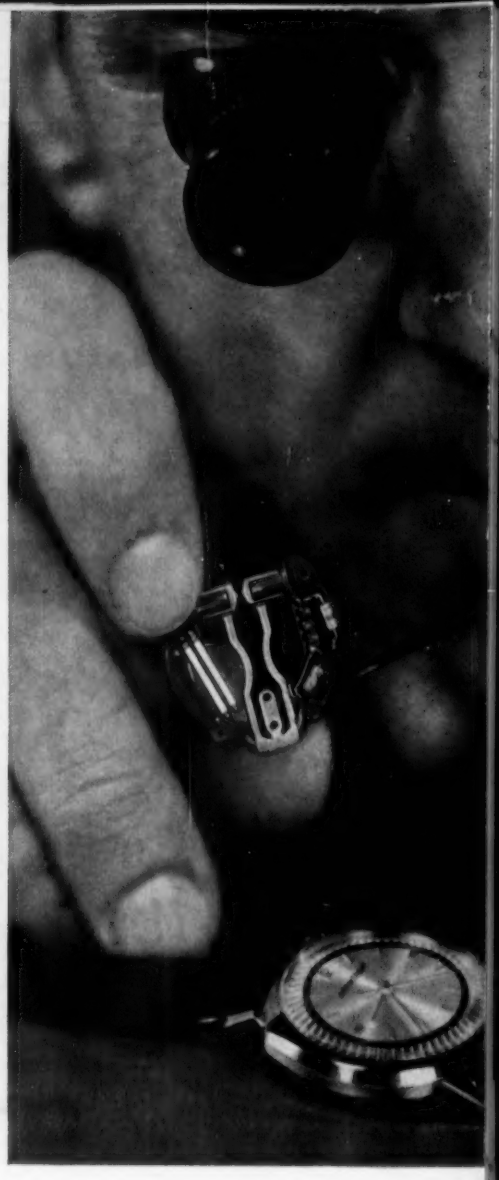

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